MADROÑO, Vol. 62, No. 4, pp. 241–268, 2015

A MOSS FLORA OF LAKE COUNTY, CALIFORNIA

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ABSTRACT

The moss flora of Lake County, California comprises of 300 species and one variety within 111 genera. This represents 44 percent of the California moss flora occupying an area less than one percent of the state land area. Six species, *Bryum veronense* De Notaris, *Gemmabryum kunzei* (Hornschuch) J.R. Spence, *Schistidium flaccidum* (De Notaris) Ochyra, *Tortella alpicola* Dixon, *Trichodon cylindricus* (Hedwig) Schimper, and *Trichostomum brachydontium* Bruch were documented as new for California. Four species, *Acaulon mediterraneum* Limpricht, *Funaria convexa* Spruce, *Gymnostomum viridulum* Bridel and *Schistidium echinatum* Ignatova & H.H. Blom, were documented as new records for the North American moss flora. During this study, thirteen species were described as new to science with at least one occurrence documented from Lake County: *Didymodon californicus* J.A. Jiménez, D.R. Toren & Shevock, *D. eckeliae* R.H. Zander, *D. norrisii* R.H. Zander, *Gemmabryum vinosum* J.R. Spence & Kellman, *Grimmia serrana* Muñoz, Shevock & D.R. Toren, *G. torenii* R.I. Hastings, *Homalothecium californicum* Hedenäs, Huttunen, D.H. Norris & Shevock, *Imbribryum torenii* J.R. Spence & Shevock, *Orthotrichum persimile* F. Lara, R. Medina & Garilleti, *Ptychostomum pacificum* J.R. Spence & Shevock, *Schistidium splendens* T.T. McIntosh, H.H. Blom, D.R. Toren & Shevock, *S. squarrosum* T. T. McIntosh, H.H. Blom, D.R. Toren & Shevock and *Scleropodium occidentale* B.E. Carter.

Key Words: Biodiversity, bryogeography, bryophytes, California Floristic Province.

Lake County, California, located in the central portion of the northern Coast Ranges and about midway between the Pacific Ocean and the Sacramento Valley, is named for Clear Lake, the largest natural freshwater body wholly within the state (Fig. 1). It was formed in 1861 from parts of Mendocino and Napa counties, but the area had settlers from at least the 1840s. Its neighboring counties are Mendocino, Sonoma, Napa, Yolo, and Glenn. The total area of the county is about 1329 mi^2 (slightly larger than the state of Rhode Island), of which 71.52 mi^2 is water. According to the 2010 U.S. census, the population is 64,665. The elevational range covers nearly 6500 ft, the lowest point 620 ft on Putah Creek at the Napa County line to the highest point, 7056 ft at the summit of Snow Mountain. Other mountains in the northern part of the county located within the Mendocino National Forest are Sheetiron Mountain (6503 ft), Hull Mountain (6873 ft), Goat Mountain (6121 ft), and the southern flanks of Mt. Sanhedrin, whose summit is in Mendocino County with an elevation of 6175 ft. There are three major drainage systems within the county. In the northern portion the Eel River has its origin and flows to its mouth in Humboldt County. Stony Creek, which flows to the Sacramento Valley, has its headwaters on Snow Mountain. In the central portion, the main streams, which flow into Clear Lake, are Middle Creek, Forbes Creek, Adobe Creek, Scotts Creek, and Kelsey Creek. Cache Creek, which flows to the Sacramento River, has two forks, one of which is the outlet of Clear Lake and the other is the north fork which is dammed to form Indian Valley Reservoir. The southern portion of the county is drained by Putah Creek. A few of its tributaries are St. Helena Creek, Anderson Creek, Dry Creek, and Soda Creek. There are both federal and state protected areas located in the county, and collection permits were obtained for the collecting and inventorying mosses in these areas. The Mendocino National Forest, administered by the U.S. Forest Service, has about 375 mi^2 within Lake County, and these federal lands stretch from the mountains east of the town of Lucerne on Clear Lake to the northernmost portion of the county on Kneecap Ridge. Within the National Forest is the Snow Mountain Wilderness, a federally designated wilderness area created by the passing of the California Wilderness Act of 1984, which designated about 37,000 acres. In 2006 the California Coastal Wild Heritage Wilderness Act was signed into law adding nearly 24,000 acres to the wilderness, presently totaling 60,076 acres. Part of this area is in Colusa and Glenn counties. The other federal lands are the Bureau of Land Management's 50,000 acre Cow Mountain Recreation Area, part of which is in Mendocino County. The Cache Creek Wilderness and Cache Creek Wildlife Area are located in eastern Lake County, the latter cooperatively managed by the Bureau of Land Management and the California Department of Fish and Game. The BLM also owns many small parcels scattered throughout the county. State protected areas include Clear Lake State Park at the north base of Mt. Konocti, Boggs Mountain Demonstration State Forest near Cobb Mountain, and Rodman

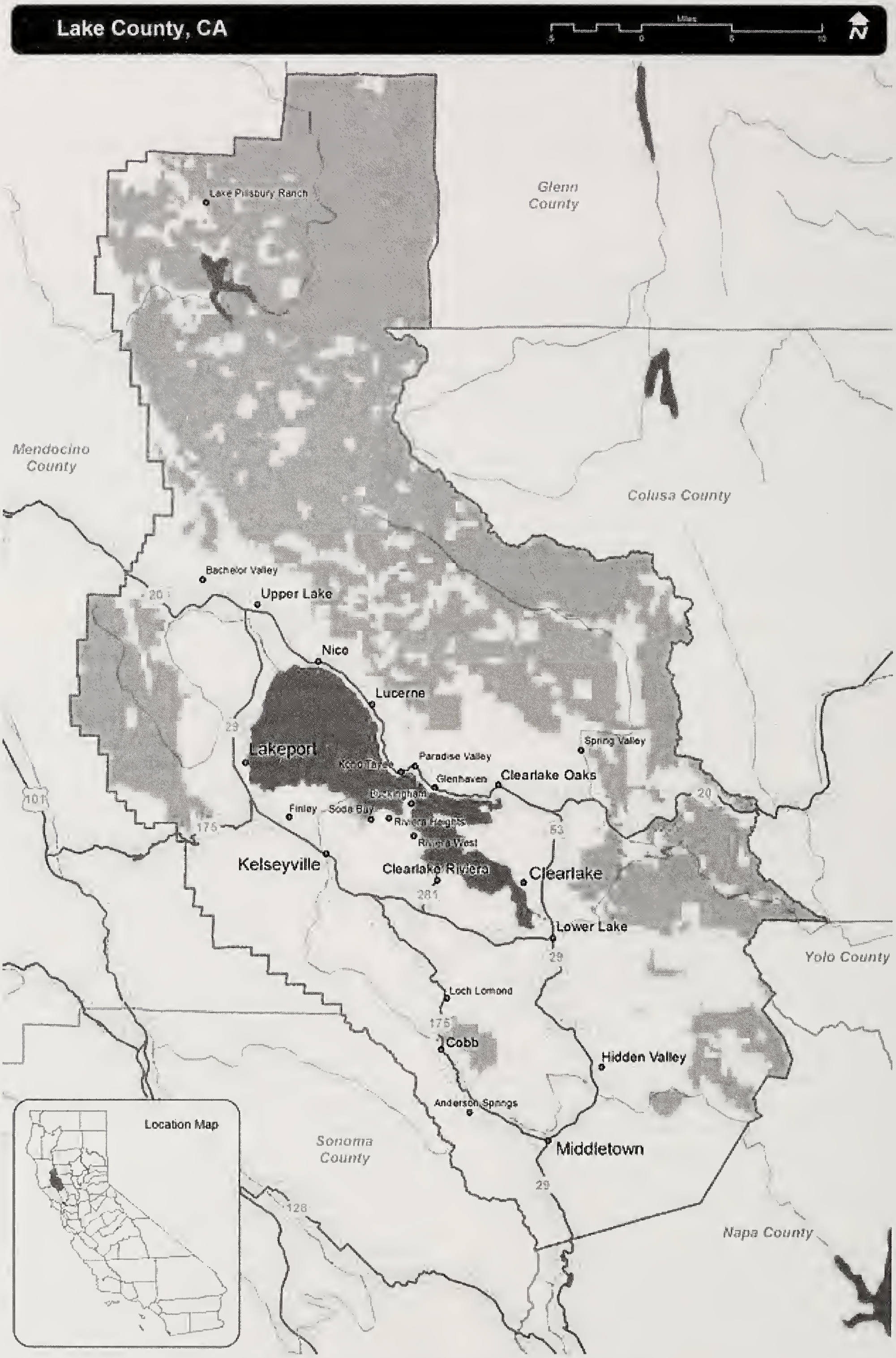

FIG. 1. Map of Lake County, California. Shaded areas represent public lands.

Slough Preserve, the major northern inlet to Clear Lake. These three areas were visited numerous times in order to collect voucher specimens. Four other state protected areas were visited briefly: Anderson Marsh State Historic Park, Robert Louis Stevenson State Park (Lake County portion), Loch Lomond Vernal Pool Ecological Reserve, and Boggs Lake Ecological Reserve.

CLIMATE

The climate of Lake County is essentially Mediterranean, characterized by cool, wet winters and warm, dry summers. Daily temperatures may vary as much as 40° or 50°F. Marine fogs rarely penetrate the western boundaries of the county, contributing to low relative humidity during the summer months. Largely due to the effects of topography annual precipitation is higher in the western and mountainous parts. Annual average precipitation at Boggs Mountain (Cobb Mountain area) is 71 inches. The towns of Lakeport, Clearlake, Kelseyville, and Upper Lake receive an average of 37, 32, 30, and 34 inches respectively. Precipitation in the form of snow can occur throughout the area but usually melts quickly, except on the highest mountains where it may persist until summer.

GEOLOGY

The geology of the county is very complex, consisting of an array of formations of different ages (Jennings and Strand 1960). One of the largest of these is the Franciscan complex, dating from the Jurassic Period and consists largely of sandstone, shale, greenstone, chert, and scattered outcroppings of pillow basalt. Marine sedimentary rocks of the Great Valley Group, also of Jurassic and Cretaceous ages, are another major formation in the area east of Clear Lake (Enderlin 2007). Scattered formations of serpentinized ultramafic rocks associated with the Franciscan complex are another abundant rock type. Quaternary alluvium and lake deposits also occur around Big Valley, Kelseyville, and Lower Lake. The northernmost of a number of volcanic fields in coastal California is termed the Clear Lake Volcanics. The youngest part of this field located near Clearlake Oaks and Sulphur Bank Mine is thought to be less than 40,000 years old (Enderlin 2007). The most prominent volcanic peaks are Cobb Mountain (4724 ft), Mt. Konocti (4305 ft), Boggs Mountain (3750 ft), Siegler Mountain (3635 ft), and Mt. Hannah (3980 ft). Rock types of these formations include andesite, dacite, rhyolite, obsidian, and olivine basalt (Chapman 1975). Clear Lake, with its 68 mi^2 of surface area, is believed to be the oldest lake in North America, and is geologically termed a structural basin (Enderlin 2007). It sits on a huge block of stone, which slowly tilts in the northern direction at the same rate as the lake fills in with sediment, thus keeping the water at roughly the same depth. This process called subsidence is continuing. Indeed, if it were not for this process, the lake would have filled in with sediment long ago (Enderlin 2007).

PLANT COMMUNITIES

Following the classifications of Munz and Keck (1970), the vegetation types of Freshwater Marsh, Coniferous Forest, Mixed Evergreen Forest, Woodland-Savanna, and Chaparral occur within the county and these are divided into several plant communities. Some of these vegetation types are often discontinuous when topographical and edaphic factors are considered.

The Freshwater Marsh is dominated by *Cephalanthus occidentalis* L. var. *californicus* Bentham, *Salix exigua* Nuttall, *S. gooddingii* C. Ball, *Scirpus acutus* Bigelow, and *Typha latifolia* L. Mosses frequently found are *Drepanocladus aduncus* (Hedwig) Warnstorf, *D. polygamus* (Schimper) Hedenäs, *Fissidens fontanus* (Bachelot de la Pylaie) Steudel, and *Leptodictyum riparium* (Hedwig) Warnstorf.

The Coniferous Forest is represented by Yellow Pine Forest, Douglas-Fir Forest, and Red Fir Forest. The first of these is named for its dominant, *Pinus ponderosa* Laws., which covers considerable area at middle elevations and often has admixtures of *Arbutus menziesii* Pursh. and *Quercus kelloggii* Newberry. The dominant understory species are *Arctostaphylos manzanita* C. Parry, *Ceanothus integerrimus* Hooker & Arnott, and *Toxicodendron diversilobum* (Torrey & A. Gray) E. Greene. The dominant moss species are *Brachytheciastrum velutinum* (Hedwig) Ignatyov & Huttunen, *Dicranoweisia cirrata* (Hedwig) Lindberg, *Homalothecium nuttallii* (Wilson) A. Jaeger, and *Grimmia trichophylla* Greville.

The Douglas-Fir Forest, dominated by *Pseudotsuga menziesii* (Mirbel) Franco is a more restricted community occurring mostly on north slopes and canyon bottoms in the northern portion of the county. The understory includes *Cornus nuttallii* Audubon, *Corylus cornuta* Marsh. var. *californica* (A. DC.) W. Sharp, and *Rubus parviflorus* Nuttall. Some mosses of the Douglas-Fir Forest are rare or even absent in other plant communities in the county. Some examples are *Dicranum fuscescens* Turner, *D. howellii* Renauld & Cardot, *Plagiothecium laetum* Schimper, and *Trachybryum megaptilum* (Sullivant) W.B. Schofield.

The Red Fir Forest, dominated by *Abies magnifica* A. Murray, occurs only on two peaks in Lake County, Hull Mountain and Snow Mountain (Griffin and Critchfield 1972). Frequent associates in this community are *Abies concolor* (Gordon & Glend.) Lindley and *Calocedrus decurrens* (Torrey) Florin, with some scattered stands of *Pinus jeffreyi* Greville & Balfour. Shrubs such as

Arctostaphylos patula E. Greene, *Ceanothus cordulatus* Kellogg, and *Symphoricarpos mollis* Nuttall grow in the understory or in forest openings. This community supports several wet meadows dominated by *Veratrum californicum* Durand and an assemblage of bryophyte species that are rare or absent at lower elevations.

The Mixed Evergreen Forest is a community that is often mixed with Yellow Pine Forest but is more species rich with such members as *Quercus berberidifolia* Liebm., *Q. chrysolepis* Liebm., and *Umbellularia californica* (Hooker & Arnott) Nuttall. Common mosses in this community are *Antitrichia californica* Sullivant ex Lesquereux, *Dendroalsia abietina* (Hooker) E. Britton ex Brotherus, *Homalothecium nuttallii*, *Orthotrichum lyellii* Hooker & Taylor, and *Timmiella crassinervis* (Hampe) L. F. Koch.

The major community of the Woodland Savanna Vegetation type is the Foothill Woodland, which covers large areas of rolling hills and valley borders at low to middle elevations, often with an abundance of intermittent streams. The typical woody plants are *Aesculus californica* (Spach.) Nuttall, *Cercis occidentalis* Torrey, *Pinus sabiniana* Douglas, *Quercus douglasii* Hooker & Arnott, and *Q. wislizenii* A. DC. Some of the most interesting but inconspicuous mosses of this community grow on soil among grasses and other herbaceous plants in late winter and early spring. These ephemerals include *Acaulon muticum* (Hedwig) Müller Hal., *Entosthodon californicus* (Sullivant & Lesquereux) H.A. Crum & L.E. Anderson, *Ephemerum serratum* (Hedwig) Hampe, *Phascum cuspidatum* Hedwig, and *Pleuridium acuminatum* Lindberg.

Chaparral is a vegetation type dominated by shrubby species with evergreen leathery foliage and often-spiny branches, occurring on dry ridges with rocky, heavy soils. The vegetation is mostly impenetrable but is strongly adapted to periodic fires, following which many of the shrubs tend to stump sprout. This community consists of *Adenostoma fasciculatum* Hooker & Arnott, *Ceanothus cuneatus* (Hooker) Nuttall, *Cercocarpus betuloides* Torrey & A. Gray, *Heteromeles arbutifolia* (Lindley) Roemer, *Pickeringia montana* Nuttall, and *Rhamnus californica* Eschscholtz. Occasionally, stands of the fire dependent *Pinus attenuata* Lemmon associate with chaparral shrubs. Mosses of this community are more plentiful where openings occur naturally (eroded gullies or rock outcrops) or man-made (roadbanks), although a few species may be epiphytic in old-growth chaparral. Species of Bryaceae and the genera *Grimmia*, *Orthotrichum*, and *Syntrichia* dominate the moss component of this community.

COLLECTION HISTORY

Although there is a rich history of bryophyte collecting in California (Thiers and Emory 1992), relatively few records of mosses were documented for Lake County before this study. The earliest records are collections by Henry Bolander, who was employed as a botanical assistant for the State Geological Society in the 1860's. Unfortunately, many of Bolander's collection localities are vague and in some cases suspect, but Clear Lake was given as the locality for many species of mosses (Watson 1880). Volney Rattan was a prolific collector of vascular plants and collected *Drepanocladus aduncus* near Clear Lake in 1863. No other records were found until 1922 when T.C. Frye collected *Racomitrium varium* Mitten [=*Codriophorus varius*] near Adams Springs (Bednarek-Ochyra 2006). In 1925 Alice Eastwood of the California Academy of Sciences collected six specimens at Dashiells Ranch on the southern flanks of Mt. Sanhedrin. W. B. Schofield visited Lake County with John Hunter Thomas in 1966 and obtained 20 specimens (W. B. Schofield, personal communication). These specimens are housed at UBC. When Leo Koch published his annotated checklist of 317 mosses for California (Koch 1950), no specimens were specifically cited from Lake County even though general distributions in California for many taxa were given. Daniel Norris began a systematic study of California mosses soon after his arrival at Humboldt State in 1967 and collected in Lake County several times.

METHODS

Moss collections were initiated in Lake County by the author in 1971 and this became the topic of a master's thesis completed under the guidance of Harry D. Thiers at San Francisco State University (Toren 1977). This thesis reported 151 mosses from about 50 localities. This number was subsequently modified to 146 due to changes in species circumscription and specimen misidentifications. In 1997, collecting mosses resumed. In 1998, I began employment as a botanist with the U.S. Forest Service, Mendocino National Forest for six successive seasons. This work involved surveying for sensitive vascular plants, bryophytes and lichens. This opportunity enabled access many more remote areas and resulted in finding four additional county records. The main references used for identification were Grout (1928–1940), Lawton (1971), Flowers (1973), Sharp et al. (1994), Heyn and Hernnstadt (2004), and more recently selected treatments within volumes 27 and 28 of Flora of North America Editorial Committee (2007, 2014). Problematic specimens were sent to appropriate experts for verification or determination. Both habitat and locality information were included on herbarium labels. In some cases elevations were obtained from USGS topographic maps, and more recently from Google Earth. Field collecting for this flora ended in the spring of 2015, at which time 300 moss species

TABLE 1. SYNOPSIS OF THE MOSS GENERA AND FAMILIES OCCURRING IN LAKE COUNTY.

Amblystegiaceae	*Amblystegium*		*Ditrichum*		*Pohlia*
	Cratoneuron		*Pleuridium*		*Rhizomnium*
	Hygroamblystegium		*Trichodon*	Neckeraceae	*Bryolawtonia*
	Leptodictyum	Encalyptaceae	*Encalypta*		*Metaneckera*
Andreaeaceae	*Andreaea*	Ephemeraceae	*Ephemerum*		*Neckera*
Archidiaceae	*Archidium*	Fabroniaceae	*Fabronia*		*Porotrichum*
Aulacomniaceae	*Aulacomnium*	Fissidentaceae	*Fissidens*	Orthotrichaceae	*Orthotrichum*
Bartramiaceae	*Anacolia*	Fontinalaceae	*Fontinalis*		*Zygodon*
	Bartramia	Funariaceae	*Entosthodon*	Plagiotheciaceae	*Plagiothecium*
	Philonotis		*Funaria*	Polytrichaceae	*Atrichum*
Brachytheciaceae	*Brachytheciastrum*		*Physcomitrella*		*Meiotrichum*
	Brachythecium		*Physcomitrium*		*Polytrichum*
	Eurhynchiastrum	Grimmiaceae	*Bucklandiella*	Pottiaceae	*Acaulon*
	Homalothecium		*Codriophorus*		*Aloina*
	Kindbergia		*Coscinodon*		*Barbula*
	Oxyrrhynchium		*Grimmia*		*Bryoerythrophyllum*
	Rhynchostegium		*Niphotrichum*		*Crossidium*
	Sciuro-hypnum		*Schistidium*		*Crumia*
	Scleropodium	Hedwigiaceae	*Hedwigia*		*Didymodon*
	Trachybryum		*Pseudobraunia*		*Eucladium*
Bruchiaceae	*Bruchia*	Hylocomiaceae	*Rhytidiadelphus*		*Gymnostomum*
Bryaceae	*Bryum*	Hypnaceae	*Hypnum*		*Hennediella*
	Gemmabryum		*Isopterygiopsis*		*Hymenostylium*
	Imbribryum		*Platydictya*		*Microbryum*
	Plagiobryoides	Lembophyllaceae	*Bestia*		*Phascum*
	Ptychostomum		*Isothecium*		*Pseudocrossidium*
	Rosulabryum	Leptodontaceae	*Alsia*		*Syntrichia*
Campyliaceae	*Conardia*	Leskeaceae	*Claopodium*		*Timmiella*
	Drepanocladus		*Pseudoleskea*		*Tortella*
	Hygrohypnum	Leucodontaceae	*Antitrichia*		*Tortula*
Cryphaeaceae	*Dendroalsia*		*Nogopterium*		*Trichostomum*
Dicranaceae	*Campylopus*	Meesiaceae	*Leptobryum*		*Weissia*
	Dichodontium	Mielichhoferiaceae	*Mielichhoferia*	Pterigynandraceae	*Pterigynandrum*
	Dicranella	Mniaceae	*Epipterygium*	Ptychomitriaceae	*Ptychomitrium*
	Dicranum		*Leucolepis*	Rhabdoweisiaceae	*Amphidium*
	Orthodicranum		*Mnium*	Scouleriaceae	*Scouleria*
Ditrichaceae	*Ceratodon*		*Plagiomnium*	Seligeriaceae	*Dicranoweisia*

and one variety were documented for Lake County. Voucher specimens for pre–1977 moss collections are deposited at SFSU, with a few duplicates placed at CAS. Lake County collections obtained since 1997 are deposited at CAS.

RESULTS AND DISCUSSION

Approximately 2900 specimens were examined during the course of this study, of which the author collected the vast majority. With 301 known taxa within 111 genera, Lake County has a very rich moss flora considering it occupies less than 1% of the land area in California. Presently, there are 655 species of mosses documented for the state (Jim Shevock, personal communication). Thus, 44 percent of the state moss flora is known from Lake County. Another surprising result is that 100 taxa, or roughly 1/3 of the flora, are known from only one or two localities. The six largest moss families in Lake County by their respective numbers of species are: Pottiaceae (57), Bryaceae (42), Grimmiaceae (32), Brachytheciaceae (27), Orthotrichaceae (20), and Mniaceae (14). It is interesting to note that these are also the six largest moss families for California (Norris and Shevock 2004a), however, the order is slightly different. A synopsis of the moss genera and families occurring in the county is provided in Table 1.

It may appear from the present catalogue an excessive number of species were given the abundance rating "rare". This was due to a variety of reasons. First, a rare moss species in Lake County may be rare in California. Secondly, many taxa were only encountered once. Species considered rare in the county may be more frequent in other parts of the state due to such factors as relative humidity, or more abundant, suitable habitats determined by edaphic, hydrologic, or other conditions. Nevertheless, the presence of rare taxa contributes to the floristic diversity of the area. Though the county is located entirely within the Northwest Region of the California Floristic Province (Hickman 1993), it has a high species diversity largely due to climatic and geological conditions, and includes elements characteristic of floristic areas from the north, south, east, and west. From the north, a number of mosses reach their southern limits of distribution within Lake County and the

Northwest Region. Some examples are *Homalothecium californicum*, *Ptychostomum pacificum*, *Rhytidiadelphus triquetrus*, *Trachybryum megaptilum*, and *Trichodon cylindricus*. A number of mosses more commonly encountered in southern California were documented from Lake County and here approach their northernmost localities. Some of these are *Bestia longipes*, *Crossidium squamiferum*, *Imbribryum microchaeton*, *Plagiobryoides vinosula*, and *Scleropodium californicum*. Along the eastern portions of the county, several mosses characteristic of the eastern slope of the Sierra Nevada and Great Basin occur. These include species such as *Brachythecium rivulare*, *Coscinodon calyptratus*, *Grimmia anodon*, *Imbribryum mildeanum*, *Schistidium flaccidum*, *Syntrichia caninervis*, and *Syntrichia papillosissima*. From the west, several species adapted to areas of higher humidity along the coast are represented by few collections from small populations, often growing under suboptimal conditions. These include *Alsia californica*, *Bryolawtonia vancouveriensis*, *Neckera douglasii*, *Pohlia longibracteata*, and *Plagiothecium laetum*. Anthropogenic habitats, those influenced by human intervention, have added to the species diversity albeit many mosses of these habitats are presumably introduced. Several of these are discussed in Appendix 1. Parks, buildings, lawns, bedding plant areas, concrete bridge abutments, quarries, and even non-native trees may host numerous mosses that are rare or absent in natural settings. Some examples of these are *Barbula unguiculata*, *Brachythecium acutum*, *Campylopus introflexus*, *Didymodon umbrosus*, *Hennediella stanfordensis*, *Rosulabryum rubens*, *Tortula muralis*, and *T. papillosa*. The statewide rarities *Bryum veronense* and *Tortula brevissima* were found only once on concrete abutments. Road banks and agricultural areas often support a characteristic ruderal flora, and most species are small acrocarps. Many small species of Bryaceae occur in these habitats and several have vegetative propagules such as rhizoidal tubers and leaf-axis bulbils. Even smaller and shorter-lived specialists of disturbed soil are ephemerals such as *Acaulon muticum*, *Ephemerum serratum*, and *Phascum cuspidatum*. Mosses of disturbed soil are actually benefitted by periodic substrate alteration, which provides new areas for colonization. A suite of 20 higher elevation species constituting the only Lake County records occurs on Snow Mountain and vicinity. These are listed in Appendix 2.

CONSERVATION IMPLICATIONS

Although there is a high species diversity of mosses in Lake County, there are several species, which are rare in the county and also in California. Many are unlikely to be found without specific searching. In 2001, bryophytes were first included by the California Native Plant Society's Inventory of Rare and Endangered Plants (6th edition, 2001). Appendix 3 includes a list of taxa occurring in Lake County for which statewide conservation efforts have been applied.

ACKNOWLEDGMENTS

Grateful acknowledgement is made for permission to collect voucher specimens on the lands of numerous private landowners and the following agencies: USDA Forest Service, USDI Bureau of Land Management, Big Valley Band of Pomo Indians, California Department of Forestry, California Department of Parks and Recreation, Lake County Land Trust, and two University of California properties: the Don and Sylvia McLaughlin Natural Reserve and the Hopland Research and Extension Center. For field assistance and encouragement, thanks are extended to Dan Ambler, Mona Bourell, Judy Harpel, Kerry Heise, David Isle, Wenzhang Ma, Brent Mishler, Dan Norris, and Jim Shevock. I also thank the many specialists for verifying or identifying specimens: Bruce Allen, Tom Blockeel, Hans Blom, William Buck, Ben Carter, Patricia Eckel, Jan-Peter Frahm†, Ricardo Garilleti, Henk Greven†, Dana Griffin III, Juan Guerra, Judy Harpel, Roxanne Hastings, Lars Hedenäs, Diana Horton, Michael Ignatov, Elena Ignatova, Robert Ireland, David Jamieson, Jan Janssens, Juan Jiménez, Ken Kellman, Francisco Lara, Eva Maier, Kenneth McFarland, Brent Mishler, Robert Mullen, Jesús Muñoz, Barbara Murray, Dan Norris, Ryszard Ochyra and Halina Bednarek-Ochyra, Ronald Pursell†, Wilf Schofield†, Jon Shaw, Blanka Shaw, John Spence, Lloyd Stark, Dale Vitt, Alan Whittemore, Robert Wyatt, K. L. Yip, and Richard Zander. These contributions are referenced directly with the specimen citation in this catalogue. Lon Sharp of Lake County GIS kindly provided the county base map. Special thanks go to three friends. Ed Dearing, local expert on the vascular flora of Lake County, guided me to many unique habitats, assisted in collecting, and found several of the rarer species. Mona Bourell, former curator of bryophytes at the California Academy of Sciences aided me in the acquisition of loans, provided space, and produced labels. Jim Shevock urged me to publish this paper sooner than later and was most helpful producing labels, editing, and word processing this paper. Lastly, thanks are given to anonymous reviewers for suggestions on formatting and enhancing the display.

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APPENDIX 1

Catalogue of Lake County mosses. In this catalogue, taxa are arranged alphabetically by genus followed by the family in parens. One of four subjective abundance ratings (common, occasional, infrequent, and rare) is assigned. Abundance ratings are based on the author's field observations of the respective taxon within Lake County and may not be parallel for the entire State of California. A brief habitat description is given for each taxon, followed by up to four localities with their collection numbers. Many taxa entries are concluded with comments regarding features of recognition, comparisons and contrasts with similar species, and bryogeographical, ecological, or nomenclatural information. Unless otherwise stated, collection numbers are those of the author. Cited specimens are housed at the herbarium of the California Academy of Sciences (CAS) unless listed otherwise. Specimens with the abbreviation "MNF" preceding the collection number are those collected from the Mendocino National Forest. The abbreviation "BLM" refers to collections made on Bureau of Land Management lands. One asterisk (*) preceding the scientific name indicates the first confirmed specimen from California; two asterisks (**) indicates the first record from North America. Nomenclature follows volumes 27 and 28 of Flora North America Editorial Committee (2007, 2014) with a few exceptions. Names that differ from those used by this author are placed in brackets at the end of the taxon entry.

****Acaulon mediterraneum** Limpricht (Pottiaceae) Rare. On bare or sparsely vegetated soil in sun. Highland Springs reservoir south of Lakeport, edge of parking area below dam, *10321* (ver. by J. Guerra); Upper Lake Ranger Station west of barracks, *9352b*. The former cited specimen is the apparently the first verified record for this moss in North America. According to Stone (1988), the spore ornamentation appears to be the most useful diagnostic feature in the *A. muticum* group. In *A. mediterraneum*, the spore coat is distinctly echinulate-spinulose whereas in *A. rufescens* the ornamentation is smooth to low-papillose and often with bare spots. Sérgio (1972) treated this taxon as *Acaulon muticum* var. *mediterraneum* (Limpricht) C. Sérgio. More recent workers Stone (1988), Guerra and Cano (2000), Jiménez et al. (2002), Hassel (2003), and Sabovljevic (2006) have recognized *A. mediterraneum* as a distinct species.

Acaulon rufescens A. Jaeger. (Pottiaceae). Rare. On sunny, bare soil, sometimes in chaparral. Indian Valley Lake near dam, *Norris 67538* (UC); N end of Bachelor Valley, S of Hells Peak, *645* (SFSU); south of Rodman Slough County Park, north of Robin Hill, *10310*; Wilkinson Rd S of Kelseyville, 29 Mar 2012, *K. Kellman 6810* (CAS). Typically this ephemeral moss with its tiny bulbiform shoots is only found in late winter and early spring. [=*Acaulon muticum* var. *rufescens*].

Aloina ambigua (Bruch & Schimper) Limpricht (Pottiaceae). Rare. On sunny, bare, disturbed calcareous soil. Hwy 20 at jct of New Long Valley Rd, *7299*; base of Chalk Mtn., North Fork Cache Creek, *7300*; Hwy 20, 10.3 mi E of Hwy 53 jct, *7456*. This is recognized by its muticous, infolded leaf margins, which cover an area of dense adaxial filaments.

Alsia californica (Hooker & Arnott) Sullivant (Leptodontaceae). Rare. On shaded bases of oak and maple. Hidden Valley along Gallagher Creek N of Middletown, *5195*; Hwy 175, 1.5 mi S of Whispering Pines, *7265*; Boggs Mtn. State Forest, headwaters of Houghton Creek, *9966*. This common coastal moss has apparently made incursions only in the southwestern portion of the county.

Amblystegium juratzkanum Schimper (Amblystegiaceae). Rare. In shaded seepage area. W slope of Goat Mtn. near Wyman Creek, MNF, *7541*; Timber Lake, Snow Mtn. Wilderness, MNF, *8442*. [=*A. serpens* (Hedwig) Bruch & Schimper var. *juratzkanum* (Schimper) Renauld & Cardot]

Amblystegium serpens (Hedwig) Bruch & Schimper. (Amblystegiaceae). Occasional. In shaded seepage areas and along streams. N end of Bachelor Valley S of Hells Peak, *520* (SFSU); Hartman Creek, Hidden Valley, *5192*; Snow Mtn. Wilderness, tributary to Stony Creek, MNF, *5346b*; City of Clearlake, a garden weed, *8750*.

Amblystegium varium (Hedwig) Lindberg (Amblystegiaceae). Rare. On moist rock and soil on edge of streams and in large springy areas. Big Spring W of Potato Hill and Snow Mtn. Wilderness, MNF, *9884*; Twin Springs along Forest Rd M3, tributary to Skeleton Creek, *9907*. [=*Hygroamblystegium varium* (Hedwig) Mönkemeyer]

Amphidium californicum (Hampe ex Müller Hal.) Brotherus (Rhabdoweisiaceae). Common. Under rock overhangs and cliff crannies. Head of Grizzly Canyon between Elk Mtn. and Horse Mtn., MNF, *7682*; Anderson Creek along Socrates Mine Rd, *5201*; Hells Peak, *549* (SFSU); Stony Creek, Snow Mtn. Wilderness, MNF, *7610*. This moss forms soft, deep cushions. When dry, the leaves are very crisped. Capsules are rare but when present are goblet-shaped with eight ribs and lack a peristome.

Amphidium lapponicum (Hedwig) Schimper (Rhabdoweisiaceae). Rare. On shaded, vertical rock faces at higher elevations. S slopes of Sheetiron Mtn., W of Low Gap, MNF, *Shevock 15867* (CAS); High Rock, Forest Rd M6 at Eel River Crossing, MNF, *8109*; Rock outcrop, headwaters of Cold Creek, two mi N of Crockett Peak, *9885*. This species has less linear, entire leaves and being autoicous, fruits more frequently.

Anacolia baueri (Hampe) Paris (Bartramiaceae). Occasional. On soil in open places at low elevations. Near Hells Peak, *299* (SFSU); North Cow Mtn. BLM Recreation Area, *6959*; Old Long Valley Rd near Spring Valley, *7367*; Morgan Valley near Rieff Rd, *7054*.

Anacolia menziesii (Turner) Paris (Bartramiaceae). Common. Mostly on N facing boulders and cliffs. Hells Peak near waterfall, *6873*; E slope of Cobb Mtn. *7121*; Clear Lake State Park, *6828*; Mt. Konocti, near summit, *7880*. This species often grows in deep tufts with rhizoids forming a dense, rusty tomentum on the lower stems. The capsules are globose and wrinkled when dry.

Andreaea heinemannii Hampe & Müller Hal. (Andreaeaceae). Rare. On sunny or shaded volcanic rock. Boggs Mtn. State Forest, on dacite, *7113* (det. by B. Murray); Mt. Konocti, summit of Wright Peak, on dacite, *7858*; E slope of Cobb Mtn., on rhyolite, *7114* (det. by B. Murray); Along Eel River at N base of Pine Mtn., MNF, *10179*. This plant can be recognized by its narrow, subulate leaves with a weak costa.

Andreaea rothii F. Weber & D. Mohr (Andreaeaceae). Rare. On partly shaded dacite. E slope of Cobb Mtn., *7115* (det. by B. Murray). This is distinguished from the more common *A. heinemannii* by its broader, somewhat secund leaves and more differentiated costa.

Antitrichia californica Sullivant ex Lesquereux (Leucodontaceae). Common. On hardwood tree trunks and shaded boulders. Hells Peak, *6871*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *6894*; Blue Lakes, old county rd, *5011*; Mt. Konocti, summit, *7870*. This is the most dominant epiphyte on oaks in the county.

Archidium sp. [Archidiaceae]. On moist volcanic soil and sandy soil of lake deposits in sun. Hidden Valley at end of Conestoga Road, *9994;* Robin Hill south of Rodman Slough County Park, *10328*, *10338*, 10339; meadow northwest of Boggs Lake, *10351*. The first report of the genus *Archidium* in California (*Kellman 3531*, CAS) is from north-central Santa Cruz County, identified as *A. alternifolium* (Kellman 2003). The plants from Lake County cited above appear to the author to be identical to *Kellman 3531* (CAS). All of these Californian specimens do not agree well with any species treated in the worldwide monograph of *Archidium* (Snider 1975), as well as the treatments for the genus in Australia (Stone 2012) and North America (Spence 2007). The author concurs with W.R. Buck (pers. comm. 2015), that these specimens may represent an undescribed species.

Atrichum selwynii Austin (Polytrichaceae). Occasional. On shaded soil and soil over rock, especially eroded creek banks and roadcuts. Blue Lakes, old county rd, *5004*; N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7428*; Grizzly Canyon N of Elk Mtn., MNF, *7692*; Alder Creek, Cobb Mtn., *7090*. This may be recognized by the presence of low lamellae on the midrib, coarsely serrate leaf margins, and sporophytes with smooth calyptrae.

Aulacomnium androgynum (Hedwig) Schwägrichen (Aulacomniaceae). Occasional. On shaded rotten logs, forest floor and tree bases; rarely present outside coniferous forest. Forest Rd M6 at Provence Cabin, MNF, *5058h*; one mi W of Soda Creek Ranger Sta., MNF, *5090*; Crockett Camp, Snow Mtn. Wilderness, MNF, *5141*; W slope Goat Mtn. near Wyman Creek, MNF, *7562*. This is easily recognized by the leafy shoots that are topped with a stalk bearing terminal clusters of gemmae. The uncommon capsules are sulcate when dry.

Aulacomnium palustre (Hedwig) Schwägrichen (Aulacomniaceae). Rare. In wet meadows at higher elevations. N cirque of Hull Mtn., MNF, *7228, 7621*; head of Mill Creek, Mt. Sanhedrin, MNF, *7636*; wet meadows N of Forest Rd M3 and Crockett Peak, *9903*. This wetland species is far more common in the Sierra Nevada than the Coast Ranges.

Barbula convoluta Hedwig (Pottiaceae). Infrequent. Soda Bay Rd, Mt. Konocti, *7355*; Hidden Valley N of Middletown, *7373*; Lakeport, Lake County Museum grounds, *7662*; Clear Lake State Park, *7035*. This species forms bright yellow-green cushions, the leaves have a mostly non-excurrent costa, and the sporophyte has a yellow seta.

Barbula unguiculata Hedwig (Pottiaceae). Rare. Library Park, Lakeport, *7663*; Little Borax Lake, base of Mt. Konocti, *7852*; W of Lakeport near Hartley Rd, on garden soil, *8784* (coll. E. Dearing). In contrast to *B. convoluta,* this species has a reddish-brown seta and excurrent costa.

Bartramia aprica Müller Hal. (Bartramiaceae). Infrequent. On shallow soil over rock, in open areas such as grasslands and oak woodland. N end of Bachelor Valley S of Hells Peak, *6862* (ver. by D. Griffin III); Manning Creek, four mi W of Lakeport on Hwy 175, *8509*; Forest Rd M12 to Bartlett Springs above Hwy 20, *9359*; Hidden Valley, end of Conestoga Rd, 16 Apr 2012, *E. Dearing s.n.* (CAS). This moss forms dense tufts of stiff, straight, somewhat glaucous shoots. Damayanti et al. (2012) demonstrated that *Bartramia stricta* Bridel consists of two morphologically and molecularly differentiated species, one from southern South America and the other from the Mediterranean and western North America. Subsequently, Müller (2014) determined that *Bartramia aprica* is the correct name for the Mediterranean and western North American plants.

Bestia longipes (Sullivant & Lesquereux) Brotherus (Lembophyllaceae). Rare. On shaded boulders and exposed tree roots. Clear Lake State Park along Kelsey Creek Slough, *6844, 7157*; Anderson Springs, *2529* (SFSU); Robert Louis Stevenson State Park, Troutdale Creek, *8427*. The Lake County occurrences represent the northernmost outposts for this Californian endemic (Shevock et al. 2008). Luxuriant colonies can be seen at Clear Lake State Park.

Brachytheciastrum collinum (Schleicher ex Müller Hal.) Ignatov & Huttunen (Brachytheciaceae). Rare. In shaded rock crevices. Summit Springs Trail, Snow Mtn. Wilderness, MNF, *7464*; N cirque, Snow Mtn. Wilderness, MNF, *9164*. This species is common in the Great Basin and High Sierra Nevada; the Snow Mtn. populations can be regarded as western outliers.

Brachytheciastrum velutinum (Hedwig) Ignatov & Huttunen (Brachytheciaceae). Occasional. On shaded tree bases, rotten logs, soil, and over duff. Boggs Mtn. State Forest, *5016*; Corbin Creek S of Pine Kop, MNF, *5058g*; E slope Cobb Mtn., *7086*; Garrett Mtn. above Bucknell Creek, MNF, *7424*. This fine-textured, more or less glossy moss prefers coniferous forests.

Brachythecium acutum (Mitten) Sullivant (Brachytheciaceae). Infrequent. Growing on soil, always as a lawn weed. Lakeport, Library Park, *7665*; Lakeport at Lake County Fairgrounds, *9589* (det. by M. Ignatov); Lakeport at Anchorage Inn Motel, *9542a* (det. by M. Ignatov); Along Hwy 20 at Blue Lakes

Lodge Resort, *9586a* (det. by M. Ignatov). The first report of this *Brachythecium* Schimper from California was apparently from Ignatov et al. (2008), from a lawn in Los Angeles County. They suspected it was introduced and gave its natural habitat as "wet soil and peat in fens and swamps".

Brachythecium albicans (Hedwig) Bruch & Schimper (Brachytheciaceae). Common. On shaded soil, litter, and boulders. Crockett Camp, Snow Mtn. Wilderness, MNF, *5139*; Blue Slides Lake, MNF, *5268* (ver. by D. Norris); South Cow Mtn. BCM Recreation Area, *7027*; Clear Lake State Park, *6850*.

Brachythecium asperrimum (Müller Hal.) Sullivant (Brachytheciaceae). Infrequent. On moist soil in shade. Canyon of Bucknell Creek between Garrett Mtn. and Pine Mtn., MNF, *8895*; Forest Rd M8 at MNF boundary, *7523*; Grizzly Canyon N of Elk Mtn., MNF, *7951*; Hwy 175 near Salminas, *5215c*. This is easily confused with the more common *Brachythecium frigidum* (Müller Hal.) Bescherelle, but grows in somewhat dryer habitats.

Brachythecium bolanderi (Lesquereux) A. Jaeger (Brachytheciaceae). Occasional. On shaded soil banks, often mixed with other mosses. Slope W of Hells Peak, *634* (SFSU); Scotts Valley Rd S of Blue Lakes, *8729*; Dashiells Creek W of Lake Pillsbury, MNF, *7260* (ver. by M. Ignatov); South Cow Mtn. BLM Recreation Area, Rd to Red Mtn. Camp, *8162b*. This species, not found with sporophytes in the county, is rather nondescript and resembles *Brachytheciastrum velutinum*, but has broader leaves and is less glossy.

Brachythecium frigidum (Müller Hal.) Bescherelle (Brachytheciaceae). Common. In springs, seeps, wet montane meadows and along streams. Boggs Mtn. State Forest, *7104*; Streeter Ridge, Horse Mtn., MNF, *7454*; headwaters of Bear Creek, Snow Mtn. Wilderness, MNF, *7486*; Forest Rd M8 at MNF boundary, *7524*. This extremely variable moss grows in wet places of almost every description.

Brachythecium rivulare Bruch & Schimper (Brachytheciaceae). Rare. On rock in splash zone of cascading stream. Headwaters of Bear Creek, Snow Mtn. Wilderness, MNF, *7510* (ver. by M. Ignatov). This can be distinguished from the extremely common *B. frigidum* by its more aquatic habitat, its leaves having less serrulate margins, more shortly tapering apices, and larger alar areas.

Brachythecium rutabulum (Hedwig) Bruch & Schimper (Brachytheciaceae). Rare. On moist soil among grasses and sedges on edge of meadow, sometimes partially submerged. Cold Spring, Walker Ridge, *9870*; Big Spring W of Potato Hill and Snow Mtn. Wilderness, MNF, *9880* (ver. by J. Janssens).

Bruchia flexuosa (Schwägrichen) Müller Hal. (Bruchiaceae). Rare. On moist shaded soil along drainage. County Park W of Middletown, *9400*; same locality, *9816 & 9849*. This ephemeral species may be more common in California than the few records indicate. It has been reported from Mendocino County (Rushing 1986) and Santa Cruz County (Kellman 2003).

Bryoerythrophyllum columbianum (F.J.Hermann & E. Lawton) R.H. Zander (Pottiaceae). Rare. On sunny soil over rock in grassy woodland, four mi W of Lakeport on Hwy 175, *6999* (ver. by R. Zander); Big Canyon Rd near Ettawa Springs, *9388*. This small inconspicuous moss may be more common than presently documented. It is also known from single collections in several counties extending to central California.

Bryoerythrophyllum ferruginascens (Stirton) Giacomini (Pottiaceae). Rare. On moist, bare rocky soil, on edge of seasonal stream. E tributary to S fork of Scotts Creek, 0.5 mi S of main stem confluence, *10177*. This specimen, although somewhat reduced in size, has multicellular rhizoidal gemmae, a definitive character for certain identification. They are orange and sometimes irregularly branched. The leaves are slightly spreading from an upright base and microscopically the ventral surface of the costa is flattened in cross-section. The first report of this species (*T. Sagar 518*) from California was from the Santa Monica Mts. in Ventura County (Sagar and Wilson 2007). I have examined this specimen, which was determined by R.H. Zander and it compares favorably with the Lake County specimen, although gemmae were not found. The two California localities have filled a gap in its range between western Canada and México (Zander 2007).

Bryolawtonia vancouveriensis (Kindberg) D.H. Norris & Enroth (Neckeraceae). Rare. On shaded rock overhangs and in crevices near running water. Grizzly Canyon N of Elk Mtn., MNF, *7685*; same area 1/4 mi downstream, *7950*; Canyon of Bucknell Creek between Garrett Mtn. and Pine Mtn., MNF, *8899*. In California, this species is much more common in the fog belt along the immediate coast.

Bryum argenteum Hedwig (Bryaceae). Common. On sunny, dry soil or rock. Clear Lake State Park, *6848*; Manning Creek, Hwy 175, four mi W of Lakeport, *7004*; Central Park, Middletown, *7845*; forest Rd M12 from Nice to Bartlett Mtn., MNF, *8130*.

Bryum calobryoides J.R. Spence (Bryaceae). Rare. On moist soil over rock near stream. Bartlett Mtn. along Forest Rd M12 below Pinnacle Rock, MNF, *E. Dearing s.n.* (det. by J. Spence).

Bryum chryseum Mitten (Bryaceae). Rare. On dry volcanic soil in oak woodland, mixed with other mosses. Jerusalem Valley, 0.1 mi N of Gunther Creek crossing, *10267*. Toren and Heise (2009) first reported this species from North America north of México and subsequently it has been collected in several California counties. The very small plants with their shiny golden color and reflexed leaf apices make this species unmistakable. The previous known range was México to Chile.

***Bryum veronense** De Notaris (Bryaceae). Rare. On sunny, old concrete wall. Jerusalem Grade Rd at Soda Creek crossing, *9986* (ver. by J. Spence). This species resembling a green version of *Bryum argenteum* was found growing with the latter. Spence (2007) reported the first North American record from Colorado and it has subsequently been collected in Ontario, Quebec, and Vermont (Spence 2007).

Bucklandiella affinis (Schleicher ex F. Weber & D. Mohr) Bednarek-Ochyra & Ochyra (Grimmiaceae).

Rare. On shaded rock, sometimes near water. E slope of Cobb Mtn. above Whispering Pines, *7134* (ver. by Bednarek-Ochyra); N slope of Kneecap Ridge, tributary of Sheep Creek, MNF, *8835* (ver. by Bednarek-Ochyra); Boggs Mtn. State Forest, *8923*. This is similar to *Bucklandiella heterosticha* (Hedwig) Bednarek-Ochyra & Ochyra but has a more delicate texture and darker green color.

Bucklandiella heterosticha (Hedwig) Bednarek-Ochyra & Ochyra (Grimmiaceae). Occasional. On sunny or shaded boulders and cliff faces. Forest Rd M1 at Eel River below Lake Pillsbury, MNF, *7267*; Grizzly Canyon N of Elk Mtn., MNF, *7962*; Cobb Mtn., E slope, *7134*; High Rock E of Hull Mtn., MNF, *8107*.

Bucklandiella obesa (Frisvoll) Bednarek-Ochyra & Ochyra (Grimmiaceae). Rare. On shaded rock near stream. N slope of Kneecap Ridge, tributary of Sheep Creek, *8838* (ver. by Bednarek-Ochyra). This species typically grows in more shaded habitats than the other species of the genus and the seta is relatively shorter.

Campylopus introflexus (Hedwig) Bridel (Dicranaceae). Rare. On sunny, acidic soil on edge of vernal pool. S shore of Clear Lake at Sulphur Bank Mine, *8027*. This introduced moss can be recognized by its lanceolate-subulate leaves and hyaline awns that are reflexed at 90° when dry. Carter (2014) reported this inland locality and gave an account of its spread in western North America.

Ceratodon purpureus (Hedwig) Bridel (Ditrichaceae). Common. In open areas, mostly on disturbed soil. The Slides W of Lake Pillsbury. MNF, *5042a*; Sulphur Bank Mine, Clear Lake, *7277*; Bartlett Springs Rd near Reister Bridge, MNF, *8139*; N end of Bachelor Valley S of Hells Peak, *329* (SFSU).

Ceratodon stenocarpus Bruch & Schimper (Ditrichaceae). Infrequent. On soil or soil over rock in crevices. Near summit of Mt. Hannah, *9402a*; Goat Rock NW of Middletown and SW of Harbin Springs, *10131*; Mt. Sanhedrin, margin of wet meadow above headwaters of Mill Creek, *10225*.

Claopodium bolanderi Best (Leskeaceae). Infrequent. Found only in mixed conifer forest on shaded rocks and tree bases. Ericson Ridge, Mt. Sanhedrin, MNF, *5107*; S of Summit Lake, MNF, *7185*; Stony Creek, Snow Mtn. Wilderness, MNF, *7599*; N slope of Kneecap Ridge, tributary to Sheep Creek, MNF, *8832*.

Claopodium whippleanum (Sullivant) Renauld & Cardot (Leskeaceae). Common. On shaded, bare soil banks, sometimes in rock crevices. Pogie Point Campground, Lake Pillsbury, MNF, *5082*; Wyman Creek S of Goat Mtn., MNF, *7559*; along Pitney Ridge to Youngs Peak, MNF, *8068*; Clear Lake State Park, *7161*.

Codriophorus acicularis (Hedwig) Palisot de Beauvois (Grimmiaceae). Infrequent. On rock along streams in sun or open shade. Rattlesnake Creek E of Hull Mtn., MNF, *8100*; Forest Rd M1 at Eel River Bridge below Lake Pillsbury, MNF, *7443*; Crabtree Hot Springs, MNF, *5239*; Bucknell Creek between Garrett Mtn. and Pine Mtn., *8892*. This is one of a group of rheophytes, or species of seasonal streambeds. It is not as common as *Schistidium rivulare* (Bridel) Podpěra or *Scleropodium obtusifolium* (Mitten) Kindberg.

Codriophorus depressus (Lesquereux) Bednarek-Ochyra & Ochyra (Grimmiaceae). Rare. Semiaquatic, on volcanic rock in intermittent stream. Boggs Mtn. State Forest, headwaters of Houghton Creek, *9842*. The local specimen was first thought to be *Bucklandiella pacifica* (Ireland & J.R. Spence) Bednarek-Ochyra & Ochyra. Indeed, this plant has been confused in the past with that species. Even though the Lake County specimen was growing at a lower elevation than usual, it was separable from *Bucklandiella pacifica* in having larger plants, with larger, broader and less keeled leaves, and with more divided, less papillose peristome teeth.

Codriophorus varius (Mitten) Bednarek-Ochyra & Ochyra (Grimmiaceae). Occasional. On sunny or shaded rock or soil over rock. County rd one mi W of Soda Creek near Lake Pillsbury, MNF, *5047e*; along Soda Bay Rd, base of Mt. Konocti, *7380*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *6923*; Boggs Lake, *5214;* Adams, 25 Aug 1922, *T.C. Frye s.n.* (WTU; Bednarek-Ochyra 2006). This relatively coarse species of *Codriophorus* Palisot de Beauvois can grow along streams and trap sediment and sometimes has nearly muticous leaves.

Conardia compacta (Hooker) H. Robinson (Campyliaceae). Rare. On moist to wet soil and rock. Along small stream, Rd to Harbin Springs S of Boggs Mtn. State Forest, *7281*; Cold Spring east and upslope from Indian Valley Reservoir, *9831*; Jerusalem Valley, confluence of Gunther and Soda Creeks, *10277*. This small pleurocarp resembles *Amblystegium serpens* but has a stronger costa, longer leaf cells, and teeth at the basal leaf margins.

Coscinodon calyptratus (Drummond) C.E.O. Jensen (Grimmiaceae). Rare. Tributary to Bear Creek N of Cedar Camp, Snow Mtn. Wilderness, MNF, *9441* (det. by R. Hastings). This locality could be a western outlier for this species in California. It is more characteristic of dry interior areas of the Great Basin and Rocky Mountains.

Cratoneuron filicinum (Hedwig) Spruce (Amblystegiaceae). Rare. In wet meadows, dripping springs and splash zones of cold streams, Snow Mtn. Wilderness and vicinity, MNF, only. Wet meadow below west peak, *7480*; headwaters of Bear Creek, *7490*; seep near Bowery Flat just N of wilderness boundary, *7585*; Upper Nye Camp, *7586*; wet meadows N of Forest Rd M3 and Crockett Peak; Cold Spring, Walker Ridge, E and upslope from Indian Valley Reservoir, *9833*, *9835*, *9869*, *10117*. The plants cited from Walker Ridge deviate greatly from specimens seen by the author across California. They are deep green, rigid, with few branches, and have narrow leaves with extremely strong, excurrent costae. In North America, these plants were recognized as *Amblystegium tenax* (Hedwig) C.E. O. Jensen var. *spinifolium* (Schimper) H.A. Crum & L. E. Anderson. Interestingly, this plant has not been previously reported from California (Norris and Shevock 2004). Molecular studies show these plants most likely represent habitat modifications and should not be recognized taxonomically (Hedenäs 2012). Molecular studies were performed on *10117* by Hedenäs in 2014 revealing ITS markers having a relationship with Asiatic specimens and chloroplast markers placing *10117* among American and Asiatic specimens (L. Hedenäs, personal communication).

Crossidium squamiferum (Viviani) Juratzka (Pottiaceae). Rare. On dry, exposed calcareous rock and soil over rock. Hells Peak, *6864*; Knoxville BLM Recreation Area near Round Mtn., *7065*; Chalk Mtn., North Fork of Cache Creek, *7314*; BLM Cache Creek Management Area, Redbud Trail, *Kellman 6835*. Delgadillo (1975) mapped the distribution of this species only from southern California, but Norris and Shevock (2004) included records from two northern California counties.

Crumia latifolia (Kindberg) W.B. Schofield (Pottiaceae). Occasional. On calcareous soil or rock along streams and in seepage areas. Hells Peak below waterfall, *308* (SFSU); near Harbin Springs, *7282a*; Spring Valley along Wolf Creek, *7735*; Carter Glade above Clover Creek, MNF, *7994*. Sporophytes of *Crumia* are quite rare. The peristome teeth are divided in two forks, which are jointed and irregularly anastomosing (Schofield 1966).

Dendroalsia abietina (Hooker) E. Britton ex Brotherus (Cryphaeaceae). Common. On hardwood tree trunks and shaded boulders. Dashiells, Mt. Sanhedrin, MNF, *A. Eastwood s.n.* (CAS); Sawmill Flat, Bartlett Mtn., MNF, *5230*; North Cow Mtn. BLM Recreation Area, headwaters of Scotts Creek, *6982*; Clear Lake State Park, along Kelsey Creek slough, *6852*. The dark green, feather-like plants, which coil downward when dry, are unmistakable. It is especially common on the bark of oaks.

Dichodontium pellucidum (Hedwig) Schimper (Dicranaceae). Occasional. On seepy rock faces and along streams and waterfalls. Near Blue Slides Lake, MNF, *5270*; South Cow Mtn. BLM Recreation Area, Panther Creek, *6877*; N cirque, Hull Mtn., MNF, *7617*; Snow Mtn. Wilderness, Stony Creek, MNF, *7592*.

Dicranella heteromalla (Hedwig) Schimper (Dicranaceae). Rare. On shaded, moist bare soil or in seepy rock crevices. Just S of Lake Pillsbury along Forest Rd M1, MNF, *7175*; N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7414a* (det. by W. Schofield); Grizzly Canyon N of Elk Mtn., MNF, *7954*.

Dicranella howei Renauld & Cardot (Dicranaceae). Infrequent. On wet clay soil around small streams and seeps. Forest Rd M8 W of Rd M1, MNF, *7173*; Log Ridge along Forest Rd M1, MNF, *7673*; Buck Island along Cache Creek, *7539*; Rodman Slough E of Westlake School, *8532*. This species has a wide costa occupying 1/3 of the leaf base and is not sharply differentiated from the lamina (Crundwell and Nyholm 1977). In addition, the author has observed it growing in wetter habitats than those observed for *Dicranella varia* (Hedwig) Schimper.

Dicranella rufescens (Withering) Schimper (Dicranaceae). Rare. On moist, bare garden soil. Library Park, Lakeport, *8430, 8514*. (det. B. Allen).

Dicranella staphylina H. Whitehouse (Dicranaceae). Rare. On exposed, seasonally moist acidic soil, associated with cyanobacteria colonies. Sulphur Bank Mine, just S of main pit, *10287*. The very small, translucent plants with wide leaf cells and the constant presence of orange-brown rhizoidal tubers with irregularly arranged and protuberant cells characterize this species. It has only been recently detected in California. Arts (1985) detailed more differences between this species and the related *D. rufescens* and *D. varia.*

Dicranella varia (Hedwig) Schimper (Dicranaceae). Common. On rather shaded bare soil, often with other mosses. Ericson Ridge, Mt. Sanhedrin, MNF *5085* (det. by W. Schofield); North Cow Mtn., BLM Recreation Area, Glen Eden Trail, *6991*; Garrett Mtn., MNF, *7172*; Siegler Mtn. near summit, *7892*. This species has a sharply defined and narrow costa (Crundwell and Nyholm 1977).

Dicranoweisia cirrata (Hedwig) Lindberg (Seligeriaceae). Common. On sunny or shaded logs, often on decorticated manzanita, old fence posts, and bases of Douglas firs. E slope of Cobb Mtn., *7102*; along Corbin Creek, MNF, *5058c*; one mi W of Soda Creek near Lake Pillsbury, MNF, *5091*; Western Mine Rd N of Mt. St. Helena, *5220*. Tufts of this moss resemble pincushions.

Dicranum fuscescens Turner (Dicranaceae). Infrequent. On shaded decayed logs and bases of Douglas fir. Grizzly Canyon N of Elk Mtn., MNF, *7699*; Garrett Mtn. S of Bucknell Creek, MNF, *7416*; two mi SW of Lake Pillsbury, S of forest Rd M8, MNF, *7434*; county Rd W of Soda Creek, MNF, *577* (SFSU).

Dicranum howellii Renauld & Cardot (Dicranaceae). Infrequent. On shaded, decayed logs and steep banks mixed with other mosses. E slope of Garrett Mtn., MNF, *7171* (ver. by D. Norris); above Forest Rd M1 near M8 jct, MNF, *7431*; tributary to Willow Creek E of Log Ridge, MNF, *7455a*; one mi W of Soda Creek, MNF, *7358*.

Didymodon australasiae (Hooker & Greville) R.H. Zander (Pottiaceae). Rare. On exposed soil over rock. Chalk Mtn., North fork of Cache Creek, *7310*; forest Rd M12 from Nice to Bartlett Mtn., *8122*. This species is common in the desert areas of California but is rare in the northern part of the state.

Didymodon bistratosus Hébrard & R.B. Pierrot (Pottiaceae). Rare. On rock and soil over rock. Soda Bay Rd overlooking Clear Lake opposite Ferndale Resort, *9587* (ver. R. Zander). Originally described from Spain, this species was first reported from California from Los Angeles County (Zander et al. 2005). The Lake County site is currently the northernmost in the state.

Didymodon brachyphyllus (Sullivant) R.H. Zander (Pottiaceae). Infrequent. On moist to dry bare soil along streams and roadcuts. Hwy 20, 10 mi E of Hwy 53 jct, *7317* (ver. by R. Zander); Hwy 20 and New Long Valley Rd, *7313*; Loch Lomond Rd W of Hobergs Airport, *7895* (ver. by R. Zander). The specimen from Loch Lomond Rd was illustrated in Zander and Ochyra (2001).

Didymodon californicus J.A. Jiménez, D.R. Toren & Shevock (Pottiaceae). Rare. Rheophytic, on rocks at higher elevations. Ridge E of Crockett Peak and S of Upper Nye Meadow, MNF, Snow Mtn. Wilderness, *9926*. This recently described species (Jiménez et al. 2014) has a combination of characters not found in the widespread *Didymodon vinealis* (Bridel) R.H. Zander, such as plane leaf margins and the absence of costal stereids above midleaf.

Didymodon eckeliae Zander (Pottiaceae). Infrequent. On rock and bases of oaks. Middletown, Central Park, *7363* (ver. R. Zander); Twin Pines Casino S of Middletown, *9514*; Clear Lake State Park, *9542d*; Big Squaw Valley E of Lake Pillsbury, MNF, *9584*. This recently described moss is probably more common in western North America than currently documented. It can be told from close relatives in the *D. vinealis* group by its scalloped and bistratose leaf margins (Zander 2001).

Didymodon fallax (Hedwig) Zander (Pottiaceae). Rare. On moist soil in diffuse light. S shore of Clear Lake near Sulphur Bank Mine, 0.2 mi S of Sulphur Bank Rd, *10264*. The elongate cells covering the upper surface of the costa distinguish this plant from members of the *Didymodon vinealis* complex.

Didymodon insulanus (De Notaris) M.O. Hill (Pottiaceae). Occasional. On moist soil over rock, often along fissure lines of boulders in the flood zone of streams. North Cow Mtn. BLM land, Eight Mile Valley, *6893* (det. by D. Norris); Castle Rock Springs Rd S of Cobb Mtn., *5017*; Carter Glade above Clover Valley, *7992*.

Didymodon nicholsonii Culmann (Pottiaceae). Occasional. On rock and tree roots in the flood zone of streams. Eel River below Scott Dam, Lake Pillsbury, MNF, *7138a*; W of Low Gap, S of Sheetiron Mtn., *5169*; shore of Clear Lake S of Lucerne, *7712* (ver. by R. Zander); Hells Half Acre along Putah Creek *8485*.

Didymodon norrisii R.H. Zander (Pottiaceae). Occasional. On rock or soil over rock in seasonally wet areas, small streams, drainage ways on outcrops and cliffs. Hells Peak, *636* (SFSU, BUF); North Cow Mtn. BLM Recreation Area at CDF water tank, *6940* (BUF); Manning Creek, four mi W of Lakeport on Hwy 175, *7402* (BUF) (ver. by R. Zander); Carter Glade above Clover Creek, MNF, *7998*. When this distinctive species was described, sporophytes were unknown (Zander 1999). Subsequently, sporophytes were discovered and are peristomate but rudimentary.

Didymodon tophaceus (Bridel) Lisa (Pottiaceae). Common. On wet calcareous soil and rock in streams and seepage areas; also in wet serpentine areas. Trail to Bloody Rock NE of Lake Pillsbury, MNF, *5047f*; Carter Glade above Clover Creek, MNF, *7995*; Hwy 175, one mi E of Mendocino County line, *7451*; Knoxville BLM Recreation Area near Round Mtn., *7071*. In addition to the wet habitat, this species can be recognized by the tongue-shaped leaves and short-cylindric capsules.

Didymodon vinealis (Bridel) R.H. Zander (Pottiaceae). Common. On dry to wet soil and rock, also tree bases. Morgan Valley Rd, *7051*; N shore of Clear Lake, Rodman Slough, *7170* (BUF) (ver. by R. Zander); Crockett Peak, Snow Mtn. Wilderness along Stony Creek, MNF, *7614b* (BUF); along forest Rd M1 S of Lake Pillsbury, MNF, *7653*. This species is morphologically extremely variable.

Didymodon umbrosus (Müller Hal.) R.H. Zander (Pottiaceae). Rare. On moist soil of planter bed, Library Park, Lakeport, *9050*. The occurrence of this plant is consistent with the observations of Eckel (1986) that it is associated with human activities.

Ditrichum ambiguum Best (Ditrichaceae). Occasional. On shaded bare soil and rock crevices. County Rd to Lake Pillsbury W of Soda Creek, MNF, *5047*; 1.5 mi S of Whispering Pines on Hwy 175, *7266*; Old Blue Lakes Rd, *5002*; Deer Valley Campground, MNF, *8009*.

Ditrichum schimperi (Lesquereux) Kuntze (Ditrichaceae). Infrequent. On sunny or shaded bare, acidic soil. Hot spring at Anderson Springs, *7254*; Sulphur Bank Mine, Clear Lake, *7276*; South Cow Mtn. BLM Recreation Area E of Eight Mile Valley, *7345*; Forest Rd Ml near Packsaddle Creek, MNF, *7671*.

Drepanocladus aduncus (Hedwig) Warnstorf (Campyliaceae). Occasional. In shallow lakes, wet meadows, and large vernal pools. Boggs Lake at W base of Mt. Hannah, *5215*; Snow Mtn. Wilderness at Cedar Camp, MNF, *7485*; Vernal pool between Copper Butte and Eel River, MNF, *5162* (ver. J. Janssens); Meadows about Clear Lake, *V. Rattan s.n.* (UC).

Drepanocladus polycarpon (Blandow ex Voit) Warnstorf (Campyliaceae). Occasional. In wet montane meadows, sometimes a garden weed. Along Forest Rd M3, N of Crockett Peak, MNF, *5147*; N cirque of Hull Mtn., MNF, *7618* (det. J. Janssens as *D. aduncus* var. *polycarpon*); City of Clearlake, a garden weed, *8752*; Snow Mtn. Wilderness at Cedar Camp, MNF, *7484*.

Drepanocladus polygamus (Schimper) Hedenäs (Campyliaceae). Rare. On wet margins of shallow ponds. Tule Lake, Mt. Sanhedrin, MNF, *7201* (det. by J. Janssens); Patty's Petals Nursery, Kelseyville, *7613* (coll. E. Dearing) (det. by L. Hedenäs); Timber Lake, Snow Mtn. Wilderness, MNF, *8437*.

Drepanocladus sordidus (Müller Hal.) Hedenäs (Campyliaceae). Rare. In drainage of wet meadow surrounding calcareous warm spring. Cobb Valley N of town of Cobb, W base of Boggs Mtn. and E of Bottlerock Rd, *9731* (ver. by L Hedenäs). Although *D. sendtneri* (Lawton 1971) has been reported from North America by various authors, Hedenäs (1998) considered all these reports to be *D. sordidus*, which has a different ratio between leaf lamina cell width and leaf length as well as its preference for less mineral-rich wetland habitats.

Encalypta ciliata Hedwig (Encalyptaceae). Infrequent. On shaded shallow soil over rock, often with other mosses. Horse Creek E of Hull Mtn., MNF, *876* (SFSU); Hells Peak, *544* (SFSU); Alder Creek, Cobb Mtn., *7099* (ver. by D. Horton); Forest Rd M1, Eel River crossing below Lake Pillsbury, MNF, *9479*. This *Encalypta* is recognized by its fringed calyptra, smooth capsules, and mucronate to cuspidate leaf apices.

Encalypta rhaptocarpa Schwägrichen (Encalyptaceae). Rare. On exposed metavolcanic rock. Forest Rd M1, Eel River crossing below Lake Pillsbury, MNF, *9478a*. This species differs from *E. ciliata* and *E. vulgaris* in its hyaline awn and ribbed capsules.

Encalypta vulgaris Hedwig (Encalyptaceae). Infrequent. On dry soil over rock in open shade, often on old road banks. E of Complexion Spring, *7297*; Chalk Mtn., North fork of Cache Creek, *7311* (det. by D. Horton); Manning Creek, four mi W of Lakeport on Hwy 175, *7338* (det. by D. Horton); Bartlett Mtn., E of Nice, MNF, *8128*. This species is distinguished from *E. ciliata* and *E. rhaptocarpa* by the combination of an unfringed calyptra, muticous leaves, and smooth capsules.

Entosthodon californicus (Sullivant & Lesquereux) H.A. Crum & L.E. Anderson (Funariaceae). Rare. On bare soil in grassy areas. N end of Bachelor Valley S of Hells Peak, *656* (SFSU); four mi W of Lakeport on Hwy 175, *7001*; Jerusalem Valley, vicinity of Gunther Creek, *10268, 10271, 10274*.

Ephemerum serratum (Hedwig) Hampe (Ephemeraceae). Rare. On sunny, moist bare soil. Hwy 53 one mi S of Hwy 20, *Norris 47709* (UC); east base of Hells Peak, *1476*; just S of Lakeport at end of Linda Lane, *9055*; High Valley N of Clearlake Oaks, *8956*. This minute moss has shoots only about two mm tall, and leaves surround the mature orange capsules. It is likely to be found only during the spring months.

Epipterygium tozeri (Greville) Lindberg (Mniaceae). Common. On moist, shaded bare soil, the stems often projecting from steep streambanks. Ericson Ridge, Mt. Sanhedrin, MNF, *5086*; South Cow Mtn. BLM Recreation Area, Rocky Lake, *6901*; North Cow Mtn. BLM Recreation Area near CDF Water tank, *6973*; base of Hells Peak, *521* (SFSU). This moss is distinguished by pale green plants with pinkish tinges somewhat flattened in one plane with leaves in two distinct sizes.

Eucladium verticillatum (Withering) Bruch & Schimper (Pottiaceae). Occasional. On soil or rock in calcareous springs and small streams, usually shaded. Hells Peak, *642* (SFSU); Anderson Creek below Socrates Mine Rd, *5205* (coll. by E. Dearing); Old Long Valley Rd, *7365*; Hwy 20, four mi N of Glenhaven, *8063*. This is less common than *Didymodon tophaceus* of the same habitats and the tufts have a paler, glaucous coloration. Microscopically, just above the leaf base, the margin has projecting teeth.

Eurhynchiastrum pulchellum (Hedwig) Ignatov & Huttunen (Brachytheciaceae). Rare. On shaded rock in stream canyon. Tributary to Stony Creek NW of Milk Ranch, Snow Mtn. Wilderness, MNF, *9450*. In the field, this can be recognized by its distinctively curved and blunt-tipped branch leaves.

Fabronia pusilla Raddi (Fabroniaceae). Common. On hardwood tree trunks and rock overhangs and crevices. Lake Pillsbury, Oak Flat Campground, MNF, *5068*; S slopes of Sheetiron Mtn., W of Low Gap, MNF, *5170*; base of Mt. Konocti, Clark Drive, *7374* (det. by W. Buck); E slope of Cobb Mtn., *7135*. This very small pleurocarpous moss is distinctive by its ciliate-dentate leaves and cup-shaped capsules.

Fissidens bryoides Hedwig (Fissidentaceae). Rare. Submerged or in splash zones of small streams. Sweetwater Creek, Hidden Valley, *7075* (ver. by R. Pursell); Carter Glade, MNF, *7989*.

Fissidens crispus Montagne (Fissidentaceae). Common. Mostly on moist, shaded soil banks. Bottlerock Rd near Cobb, *7576*; Violet Spring, Log Ridge, MNF, *5284*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *6897*; Clear Lake State Park, *7353*. This species is widespread in the county but does not occur at the highest elevations.

Fissidens curvatus Hornschuch (Fissidentaceae). Infrequent. On bare soil in grassland areas. N end of Bachelor Valley S of Hells Peak, *2927* (SFSU); three mi S of Middletown on Hwy 29, *7842*; Rodman Slough E of Westlake School, *8522*; Sulphur Bank Mine, 0.2 mi S of Sulphur Bank Rd, *10286a*. This small *Fissidens* Hedwig can be recognized by its narrow, tapering leaves.

Fissidens fontanus (Bachelot de la Pylaie) Steudel (Fissidentaceae). Infrequent. Aquatic, sometimes emergent due to fluctuating water levels, along lakeshores and slow streams. Clear Lake State Park, *6846*; Blue Lakes near the Narrows, *523* (SFSU); County Rd 122 along Asbill Creek N of Middletown, *7734*; S shore of Clear Lake at Corinthian Bay County Park, *Norris 71780* (UC). It is especially abundant around the shores of Clear Lake.

Fissidens grandifrons Bridel (Fissidentaceae). Infrequent. Aquatic, in running water or in splash zones, especially around waterfalls. Snow Mtn. Wilderness, MNF, Lower Nye Camp, *5338*; tributary to Stony Creek, Snow Mtn. Wilderness, MNF, *7612*; Wyman Creek S of Goat Mtn., MNF, *7563*; Snow Mtn. Wilderness, Copper Butte Creek, MNF, *8450*. This robust aquatic species is very dark green and the stems and leaves are harsh to the touch.

Fissidens sublimbatus Grout (Fissidentaceae). Common. On sunny soil or along intermittent waterfalls. Hidden Valley N of Middletown, *7373a* (ver. by R. Pursell); three mi S of Middletown on Hwy 175, *7842a*; High Valley N of Clearlake Oaks, *8964*; Coyote Valley off Grange Rd N of Middletown, *9397* (det. by R. Pursell).

Fissidens ventricosus Lesquereux (Fissidentaceae). Rare. Aquatic, attached to rocks in small streams. Gunning Creek, Cobb Mtn., *7119*; Grizzly Canyon N of Elk Mtn., MNF, *7683*; Bucknell Creek between Garrett Mtn. and Pine Mtn., MNF, *8893*. The aquatic habitat and the sporophyte with its short, stout seta aid in identifying this species in the field.

Fontinalis antipyretica Hedwig (Fontinalaceae). Occasional. In running or still water, all elevations. St. Helena Creek N of Middletown, *7302*; Snow Mtn. Wilderness, pond at Cedar Camp, MNF, *7487*; Copsey Creek E of Lower Lake, *7331* (det. by B. Allen); Highland Creek near Highland Springs, *7907*. This is the most common species of *Fontinalis* Hedwig in the county.

Fontinalis chrysophylla Cardot (Fontinalaceae). Rare. In seasonal drainage of wet montane meadow. Upper Nye Camp near Snow Mtn. Wilderness trailhead, MNF, *5167* (det. by B. Allen). [=*F. howellii* Renauld & Cardot]

Fontinalis gigantea Sullivant (Fontinalaceae). Rare. In drainages of wet montane meadows and small streams. Crockett Camp, Snow Mtn. Wilderness, MNF, *Shevock 15821* (CAS); tributary to Stony Creek, Snow Mtn. Wilderness, MNF, *7590* (det. by B. Allen); head of Mill Creek, Mt. Sanhedrin, MNF, *7630*; same locality, *Shevock 19469* (CAS). This species has leaves, which when spread flat, are about as broad as long and the leaf keel is curved throughout. [=*Fontinalis antipyretica*]

Fontinalis howellii Renauld & Cardot (Fontinalaceae). Rare. In shallow ponds in sun or shade. Tule Lake, Mt. Sanhedrin, MNF, *5116* (ver. by B. Allen); Summit Lake, MNF, *7643*; Upper Nye Camp N of Snow Mtn. Wilderness boundary, *Shevock 15845* (CAS). This species has very long and narrow branch leaves.

Fontinalis hypnoides Hartman (Fontinalaceae). Infrequent. In sluggish stream and pond margin, sometimes attached to bases of willow trees. Rivulet above Blue Lakes at the Narrows, *538* (SFSU); Blue Slides Lake, MNF, *5261* (det. by B. Allen); Clear Lake State Park, Kelsey Creek Slough, *9859*. Typically this species inhabits ponds and sluggish streams and is the only *Fontinalis* in the county with non-keeled leaves.

Fontinalis mollis Müller Hal (Fontinalaceae). Rare. In seasonal stream. Copsey Creek E of Lower Lake, *7330* (det. by B. Allen); Middletown at old St. Helena Bridge, *8937*. This species has a similar leaf shape to that of *F. gigantea*, although the plants are smaller and occur at lower elevations. [=*Fontinalis antipyretica*]

Fontinalis neomexicana Sullivant & Lesquereux (Fontinalaceae). Rare. In shaded seasonal stream. Bucknell Creek below Streeter Ridge N of Horse Mtn., MNF, *7452* (det. by B. Allen), *7540*; Grizzly Canyon N of Elk Mtn., MNF, *7680*. This species can be recognized by its branch apices, which are strongly triangular in cross-section in addition to having abruptly apiculate perichaetial leaves.

****Funaria convexa** Spruce (Funariaceae). Rare. On rock outcrop near stream mixed with other mosses. Middle Creek Campground N of Upper Lake, MNF, *9613* (ver. by B. Allen). This species can be distinguished from *F. muhlenbergii* Turner by two characters of the operculum. It is convex, not at all mammillate and the border is a bright orange-red (Crundwell and Nyholm 1974). It was first reported from North America from Lake County, California (Toren 2008).

Funaria hygrometrica Hedwig (Funariaceae). Common. On disturbed soil and burns everywhere. Two mi N of Middletown, *Schofield 29003* (UBC); W slope of Goat Mtn., MNF, *7565*; S end of Middletown, *7309*; Upper Nye Camp, Snow Mtn. Wilderness boundary, MNF, *5166a*.

Funaria muhlenbergii Turner (Funariaceae). Infrequent. On sunny soil over rock, often in crevices. Hells Peak, *1071* (SFSU); Old Long Valley Rd, *7370*; Chalk Mtn., North Fork of Cache Creek, *7328*, E of Complexion Springs near Indian Valley Lake, *7297a*.

Gemmabryum barnesii (J.B. Wood ex Schimper) J.R. Spence (Bryaceae). Rare. On sunny soil among grasses. Lincoln Rock along Socrates Mine Rd, *5107a*; (det. by Vanderpoorten); Middletown at old St. Helena Creek bridge, *9408*; South Fork of Scotts Creek, 0.3 mi. S of main stem confluence, *10165*; Jerusalem Valley, confluence of Gunther Creek, *10275*.

Gemmabryum caespiticium (Hedwig) J.R. Spence (Bryaceae). Rare. On sunny soil and rock. Pogie Point, Lake Pillsbury, MNF, *5081* (det. by J. Spence); base of Chalk Mtn., North Fork of Cache Creek, *7325*.

Gemmabryum demaretianum (Arts) J.R. Spence (Bryaceae). Rare. On soil or soil over rock in sun, Hidden Valley at end of Conestoga Rd, *9386a*; Big Canyon Rd between Howard Springs and Ettawa Springs, *9998a*. The small, orange-brown rhizoidal tubers abundantly borne in clusters are diagnostic of this species (Arts 1992). It has been documented only recently from California.

Gemmabryum dichotomum (Hedwig) J.R. Spence & H.P. Ramsay (Bryaceae). Common. Mostly on sunny bare soil or among grasses. Hwy 20 at Nice, *7710*; Library Park, Lakeport, *7666*; Manning Creek, Hwy 175 W of Lakeport, *7002*; Forest Rd M12 to Bartlett Mtn., 1.2 mi from Hwy 20, *9378*.

Gemmabryum gemmilucens (R. Wilczek & Demaret) J. R. Spence (Bryaceae). Occasional. On sunny soil among grasses or cracks in pavement. Base of Chalk Mtn., North Fork Cache Creek, *7323* (det. by J. Spence); east shore of Clear Lake at town of Nice, *7710*; Clear Lake State Park, along Kelsey Slough, *9854;* N end of High Valley just S of MNF boundary, *8960*. Spence (2014) reports this species in North America only from California. It is distinctive with its cylindric to spheric, yellow to brown bulbils with absent or very short primordia.

Gemmabryum klinggraeffii (Schimper) J.R. Spence [Bryaceae]. Rare. On compacted, disturbed clay soil in sun. South shore of Clear Lake, Big Valley Rancheria, *10301*. This species has few documented sites in California but may be recognized by its small reddish rhizoidal tubers with protuberant cells.

***Gemmabryum kunzei** (Hornschuch) J.R. Spence (Bryaceae). Rare. In exposed rock crevices and on dry soil. NE Ridge of Snow Mtn. above N cirque, Snow Mtn. Wilderness, MNF, *9311*; (coll. E. Dearing) (det. by J. Spence); east end of Clear Lake at Sulphur Bank Mine, *E. Laeger 3705* (CAS) (det. by J. Spence); Hull Mtn., headwaters of Rattlesnake Creek, S of summit ridge, MNF, *10235*.

Gemmabryum subapiculatum (Hampe) J.R. Spence & H. P. Ramsay (Bryaceae). Rare. On bare soil, edge of wet meadow, Mill Creek, Mt. Sanhedrin, MNF, 8085. This is similar to *G. radiculosum* (Bridel) J.R. Spence & H.P. Ramsay but the basal leaf cells are rectangular.

Gemmabryum radiculosum (Bridel) J.R. Spence & H.P. Ramsay (Bryaceae). Rare. On sunny, compacted calcareous soil. Grizzly Springs, Hwy 20, nine mi E of

Hwy 53 jct, *9949*. This species has red-brown rhizoidal tubers with non-protuberant cells and the basal leaf cells are quadrate.

Gemmabryum tenuisetum (Limpricht) J.R. Spence & H. P. Ramsay (Bryaceae). Rare. On sunny, bare soil. Snow Mtn. Wilderness, Cedar Camp, MNF, *1062* (SFSU); Sulphur Bank Mine, Clear Lake, *7280* (det. by J. Spence). This is told by its large, yellowish tubers.

Gemmabryum valparaisense (Thériot) J.R. Spence (Bryaceae). Rare. In rock crevices in diffuse light. W of Butte Rock and N of Morgan Valley, *8616* (ver. by J. Spence); east shore of Clear Lake along Hwy 20, four mi N of Glenhaven, *8064a*; Pacific Ridge S of Goat Mtn. at Horse Rock, MNF, *7574*. This is recognized by its small, brown, pyriform tubers.

Gemmabryum vinosum J.R. Spence & Kellman (Bryaceae). Occasional. On sedimentary, metavolcanic or volcanic rock, usually at lower elevations. Manning Creek, four mi W of Lakeport along Hwy 175, *Shevock & Mishler 21925* (CAS); Goat Rock, two mi SW of Harbin Springs and two mi NW of Middletown, *10132*; along Harrington Flat Rd E of Boggs Lake and S of Mt. Hannah, *9399*; S banks of Eel River below Forest Rd M-1 and Logan Spring, *10087A*. This recently described species (Spence and Kellman 2015) is best developed in diffuse light and can be recognized by its short-ovate and short-awned leaves which are tinted red mostly in the upper portions.

Gemmabryum violaceum (Crundwell & Nyholm) J.R. Spence (Bryaceae). Rare. On bare ash soil. N end of Bachelor Valley below Hells Peak, *843* (SFSU); Base of Konocti at Little Borax Lake, *7853*; Bottlerock Rd near Sulphur Creek, *E. Dearing s.n.* The collection from Bachelor Valley is one of the few fruiting specimens known. At the time of its description, Crundwell and Nyholm (1963) mentioned seeing only three collections with sporophytes. It has violet rhizoids under transmitted light.

Grimmia alpestris (F. Weber & D. Mohr.) Schleicher (Grimmiaceae). Rare. On exposed rock at highest elevations. Hull Mtn. summit, MNF, *7237a* (det. by R. Hastings); tributary to Bear Creek N of Cedar Camp, Snow Mtn. Wilderness, MNF, *9439* (det. by R. Hastings).

Grimmia anodon Bruch & Schimper (Grimmiaceae). Rare. On exposed rock at the highest elevations. Snow Mtn. Wilderness near Signal Peak, MNF, *1405* (SFSU); Snow Mtn. Wilderness, West Peak, MNF, *7472*; Hull Mtn. above Timberline Camp, MNF, *7176a*; summit, Sheetiron Mtn., MNF, *5187*.

Grimmia caespiticia (Bridel) Juratzka (Grimmiaceae). Rare. On exposed rock at the highest elevations. Ridge N of East Peak, Snow Mtn. Wilderness, MNF, *7508* (det. by R. Hastings); Goat Mtn. just N of lookout, MNF, *9320* (det. by R. Hastings); Summit Springs Trail, Snow Mtn. Wilderness, *7478* (det. by R. Hastings).

Grimmia laevigata (Bridel) Bridel (Grimmiaceae). Common. On sunny rock up to 4000 ft. Manning Creek, four mi W of Lakeport on Hwy 175, *7340*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *7014*; Clear Lake State Park, *6838*; W of Lake Pillsbury at the Slides, MNF, *5042*. This species grows in dense, hoary tufts, which are firmly attached to the substrate. It has ovate-triangular leaves with broadly attached, spinulose awns. Capsules are only occasionally present.

Grimmia leibergii Paris (Grimmiaceae). Common. On shaded boulders and cliff faces mostly below 4000 ft. Two mi SW of Lake Pillsbury, S of Forest Rd M8, MNF, *7440* (ver. by J. Muñoz); Spikenard Creek, Boggs Mtn. State Forest, *7109*; Hells Peak, *6865*; Low Gap near Round Mtn., MNF, *7270*. Lawton (1971) considered *G. leibergii* to be only a form of *G. trichophylla* Greville, but Muñoz (1999) showed it to be distinct. *Grimmia leibergii* and *G. trichophylla* can grow sympatrically and young colonies can cause confusion in the field.

Grimmia lisae De Notaris (Grimmiaceae). Common. On exposed to shaded rock and soil over rock. Along Big Canyon Creek Rd, E of Boggs Mtn. State Forest, *7284*; Dashiells Creek W of Lake Pillsbury, MNF, *7262* (det. by J. Muñoz); one mi N of Middletown, *7306*; Hells Peak, *6863*. Typically this species grows on boulders near watercourses and has squarrose leaves when wet which are somewhat wider and less tapering than *G. trichophylla*. The capsules are usually brown and weakly striate. Some specimens are difficult to separate from the *G. trichophylla* without microscopic examination.

Grimmia mariniana Sayre (Grimmiaceae). Rare. On exposed to shaded volcanic or metavolcanic rock. E slope of Cobb Mtn., *7125* (ver. by J. Muñoz); S slope above Socrates Mine Rd, *7132*; summit of Cobb Mtn., *7390*; Butte Rock N of Morgan Valley near Yolo County line, *8601*; Boggs Mtn. State Forest S of Calso Camp, *8931*. Sayre (1955) described but did not illustrate the upper parts of the peristome teeth, which remain attached to the inner surface of the operculum.

Grimmia montana Bruch & Schimper (Grimmiaceae). Common. On exposed rock, all elevations. North Cow Mtn. BLM Recreation Area, Mendo Rock, *6935* (ver. by J. Muñoz); Hull Mtn., Timberline Camp, MNF, *7179*; Boggs Mtn. State Forest, *7110*; Snow Mtn. Wilderness, Summit Springs trail, *7457*.

Grimmia nevadensis Greven (Grimmiaceae). Rare. On exposed rock. Summit area of Hull Mtn. S of lookout, MNF, *7237* (det. by R. Hastings). Greven (2002) described this species and reported occurrences only from southern and eastern Sierra Nevadan counties.

Grimmia ovalis (Hedwig) Lindberg (Grimmiaceae). Occasional. Summit Springs Trail S of Cedar Camp, Snow Mtn. Wilderness, MNF, *9437* (det. by R. Hastings); W of Low Gap and S of Sheetiron Mtn., MNF, *9483a*; Bartlett Mtn. just N of Pinnacle Rock, MNF, *9623*; Butte Rock near Yolo County line, *8609* (det. by R. Hastings); Rattlesnake Creek below Hull Mtn. summit, *Ma 14-5874* (CAS, KUN).

Grimmia pulvinata (Hedwig) Smith (Grimmiaceae). Common. On exposed to shaded rock, often on concrete and tombstones. Clear Lake State Park, *7166*; Bartlett Springs, MNF, *8138*; Upper Lake Cemetery, *7446*; one mi N of Middletown, *7304*. This species is easily recognized by its rounded hoary cushions and capsule with rostrate operculum on an arcuate seta.

Grimmia ramondii (Lamark & de Candolle) Margadant (Grimmiaceae). Infrequent. On shaded boulders at higher elevations. Tributary to Stony Creek, Snow Mtn. Wilderness, MNF, *5344*; headwaters of Mill Creek, Mt. Sanhedrin, MNF, *7222*, *8033*; N slope of Kneecap Ridge, tributary to Sheep Creek, MNF, *8834*; near West Crockett Campground, Snow Mtn. Wilderness, MNF, *9496*.This montane species forms loose, dark green patches and the leaves lack hair points. The diagnostic character is the groove running along the back of the costa, forming two wings that can be seen with a 20 × hand lens.

Grimmia serrana J. Muñoz, Shevock & D.R. Toren (Grimmiaceae). Rare. On exposed metavolcanic outcrops subject to runoff in coniferous forest. Big Rock N of Deer Valley and E of Elk Mtn., MNF, *8002, 8657*; 5.5 mi NE of Upper Lake and one mi SW of High Glade Lookout, MNF, *8478* (det. by Muñoz); Forest Rd M12 SE of Pinnacle Rock, Bartlett Mtn., *9384*; unnamed rock outcrop, headwaters of Cold Creek, two mi N of Crockett Peak, *9892*. This recently described species (Muñoz et al. 2002) is distinguished by the presence of multi-stratose marginal bands that are rounded in cross-section.

Grimmia torenii Hastings (Grimmiaceae). Infrequent. On calcareous, metavolcanic rock outcrops, mostly below 3500 ft elevation. Hells Peak, *778* (SFSU), *6857*; Forest Rd M1, Eel River crossing below Lake Pillsbury, MNF, *7357*; W of Lake Pillsbury at the slides, MNF, *8089*; Big Canyon Rd S of Howard Springs, *9389* (all ver. by R. Hastings). Since its description (Hastings 2008), *G. torenii* has also been collected in San Mateo County, *Kellman 6050* (CAS).

Grimmia torquata Drummond (Grimmiaceae). Occasional. On rather shaded rock faces, often in seepy recesses, up to 5000 ft. Along Forest Rd M1 at Eel River crossing below Lake Pillsbury, *7439*; High Rock E of Hull Mtn., MNF, *8110*; Rd to Summit Lake, MNF, *7196*; Hells Peak, *625* (SFSU). Sporophytes of *G. torquata* are very rare worldwide. The Eel River locality is the only fruiting population the author has seen in the county.

Grimmia trichophylla Greville (Grimmiaceae). Common. On exposed rock, up to 6000 ft. Copsey Creek E of Lower Lake, *7321*; E slope of Cobb Mtn., *7133*; Summit Springs Trail, Snow Mtn. Wilderness, MNF, *7518*; North Cow Mtn. BLM Recreation Area, Glen Eden Trail, *6990*. This species is often confused with *G. lisae*, but the capsules are stramineous, more oblong-ovoid and more strongly striate. It is the most common *Grimmia* on serpentine substrates.

Gymnostomum aeruginosum Smith (Pottiaceae). Rare. On shaded rock overhangs. N cirque, Snow Mtn. Wilderness, MNF, *9171* (det. by P. Eckel, R. Zander). Zander et al. (2007) cited specimens of *G. calcareum* Nees & Hornschuch and *G. viridulum* Bridel from Lake County. The above specimen from Snow Mtn. was examined after that publication (Zander, personal communication, 2008).

Gymnostomum calcareum Nees & Hornschuch (Pottiaceae). Rare. On shaded, calcareous rock crevices and moist rock along streams. Anderson Creek below Socrates Mine Rd, *8919*; W of Low Gap and S of Sheetiron Mtn., MNF, *7717a*.

****Gymnostomum viridulum** Bridel (Pottiaceae). Infrequent. In calcareous rock crevices. Hells Peak, N end of Bachelor Valley, *6866*; High Rock E of Hull Mtn. off of Forest Rd 20N16, *8114*; vicinity of Butte rock N of Morgan Valley, *8611*; W of Low Gap and S of Sheetiron Mtn., *7717*. The presence of gemmae, among other characters, separates this species from *G. calcareum* (Zander et al. 2007).

Hedwigia detonsa (M. Howe) W.R. Buck & D.H. Norris (Hedwigiaceae). Common. On shaded to exposed rock. N end of Bachelor Valley, S of Hells Peak, *6860*; North Cow Mtn. BLM Recreation Area below CDF water tank, *6956*; Knoxville BLM Recreation Area near Morgan Valley, *7048*; Big Rock N of Deer Valley, MNF, *8005*. *Hedwigia detonsa* can be distinguished from *H. stellata* in the field by its eciliate perichaetial leaves (Buck and Norris 1996).

Hedwigia stellata Hedenäs (Hedwigiaceae). Infrequent. On shaded to exposed rock. North Cow Mtn. Recreation Area, Glen Eden Trail, *6992*; E slope Cobb Mtn., *7122*; Stony Creek, Snow Mtn. Wilderness, MNF, *7609*; serpentine ridge, Complexion Springs, *Sigal 164* (SFSU).

Hennediella heimii (Hedwig) R.H. Zander (Pottiaceae). Rare. On moist bare soil. End of Bachelor Valley Rd near Hells Peak, *839* (SFSU) (ver. by R. Zander); S shore of Clear Lake at Jago Bay, *7382*; S shore of Clear Lake at Konocti Bay, *8987*.

Hennediella stanfordensis (Steere) Blockeel (Pottiaceae). Rare. On shaded garden soil, compacted soil along footpaths and edges of rodent burrows. N end of Bachelor Valley near Hells Peak, *1074* (SFSU); Library Park, Lakeport, *9051;*Middle Creek Campground at base of Elk Mtn., MNF, *9352*. Steere (1951) originally named this moss *Tortula stanfordensis* Steere. In California it is found near human habitations and is always sterile.

Homalothecium aeneum (Mitten) E. Lawton (Brachytheciaceae). Rare. On dead wood. The Big Openings along Cedar Creek, MNF, *8765*; same locality, *8766*; (ver. by L. Hedenäs); S slope of Sheetiron Mtn., W of Low Gap, MNF, *5176* (det. by L. Hedenäs).

Homalothecium arenarium (Lesquereux) E. Lawton (Brachytheciaceae). Infrequent. On shaded boulders. S base of Mt. Konocti at Clear Lake State Park, *7039*; Rodman Slough, N shore of Clear Lake, *8717*; Boggs Mtn. State Forest near Grouse Spring, *8929*; Siegler Creek Canyon E of Hoberg's airport, *9291a*. This is the least pinnately branched species of the genus in the county.

Homalothecium californicum Hedenäs, Huttunen, Shevock & D.H. Norris (Brachytheciaceae). Infrequent. On shaded boulders and tree bases. Ericson Ridge, Mt. Sanhedrin, MNF, *5096*; S slope of Sheetiron Mtn. W of Low Gap, MNF, *5177*; tributary to Hull Creek W of High Rock, MNF, *8119* (ver. by L. Hedenäs); Crabtree Hot Springs, MNF, *5245* (ver. by L. Hedenäs). This robust plant has been confused in the past with *Homalothecium aeneum* but Hedenäs et al. (2009) showed it to be distinct with both molecular evidence and morphological traits.

Homalothecium nevadense (Lesquereux) Renauld & Cardot (Brachytheciaceae). Occasional. On shaded or sunny rock at higher elevations, rarely on tree bases. S slope of Sheetiron Mtn. W of Low Gap, MNF, *5176*; Ericson Ridge, Mt. Sanhedrin, MNF, *5070* (ver. by L. Hedenäs); E slope of Cobb Mtn., *7388*; Snow Mtn. Wilderness, MNF, *7501* (ver. by L. Hedenäs).

Homalothecium nuttallii (Wilson) A. Jaeger (Brachytheciaceae). Common. On shaded bark of hardwoods, rarely on rock. E slope of Cobb Mtn., *7392*; W of Goat Mtn. along Wyman Creek, MNF, *7544*; Soda Creek W of Lake Pillsbury, MNF, *5130*; near Hells Peak, *295* (SFSU).

Homalothecium pinnatifidum (Sullivant & Lesquereux) E. Lawton (Brachytheciaceae). Common. On shaded soil mixed with other mosses, often on steep banks. North Cow Mtn. BLM Recreation Area, *6934*; Lincoln Rock along Socrates Mine Rd, *5038d*; Soda Creek W of Lake Pillsbury, MNF, *5129a*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *7018*.

Hygroamblystegium tenax (Hedwig) Jennings (Amblystegiaceae). Occasional. Semiaquatic, in small streams and dripping springs. Spring at the Narrows, Blue Lakes, *540* (SFSU); Anderson Springs S of Cobb Mtn., *7169*; Elk Canyon, west base of Middle Mtn., *473* (SFSU); Hwy 20, four mi N of Glenhaven, *8062*. [=*Hygroamblystegium varium* (Hedwig) Mönkemeyer var. *varium*]

Hygrohypnum bestii (Renauld & Bryhn) Holzinger (Campyliaceae). Occasional. In perennial streams, submerged or in splash zones. Snow Mtn. Wilderness, MNF, *7476*; W slope Goat Mtn., Wyman Creek, MNF, *7564*; Boggs Mtn. State Forest, Big Spring, *7108*; Dashiells Creek, S of Mt. Sanhedrin, *7182* (det. by D. Jamieson).

Hymenostylium recurvirostrum (Hedwig) Dixon (Pottiaceae} Rare. On damp to wet, calcareous rock. Hells Peak at base of waterfall, *930*; Stony Creek waterfall NW of Milk Ranch, Snow Mtn. Wilderness, MNF, *9306* (ver. by R. Zander).

Hypnum circinale Hooker (Hypnaceae). Infrequent. On shaded rotten logs and tree bases; present only in coniferous forest. Tule Lake, Mt. Sanhedrin, MNF, *1278* (SFSU); Summit Lake, MNF, *7202*; Forest Rd 18N14 from M1, MNF, *7975*; Jones Creek, Boggs Mtn. State Forest, *7289*.

Hypnum subimponens Lesquereux (Hypnaceae). Occasional. On shaded logs, boulders, and soil, often near streams. Bear Creek Campground, MNF, *5273*; Alder Creek, Cobb Mtn., *7100*; Horse Creek along Forest Rd M-6, MNF, *8104*; Clear Lake State Park, *7160*.

Imbribryum alpinum (Hudson ex Withering) N. Pederson (Bryaceae). Rare. On wet soil along stream. N cirque, Snow Mtn. Wilderness, MNF, 9170 (ver. by J. Spence). This species is similar to *I. mildeanum* (Juratzka) J.R. Spence, but the plants are red-tinged and the leaves are recurved below. Also, the upper leaf cells are thick-walled and vermicular, more than 6:1.

Imbribryum gemmiparum (De Notaris) J.R. Spence (Bryaceae). Common. On soil or rock along small calcareous streams. Soda Creek, Lake Pillsbury, MNF, *5131* (ver. by J. Spence); Carter Glade above Clover Creek, MNF, *7987*; Snow Mtn. Wilderness, Stony Creek, MNF, *7614a*; Grizzly Canyon N of Elk Mtn., MNF, *7957*.

Imbribryum microchaeton (Hampe) J.R. Spence (Bryaceae). Rare. On sunny soil over travertine rock in runoff area. Chalk Mtn. along North fork of Cache Creek, *9980* (ver. by J. Spence). This shiny green species with its very long laminal cells resembles a *Pohlia* Hedwig, but the costa is long excurrent. The first Californian record of this species is from the Santa Monica Mts. in Ventura County (Sagar and Wilson 2007).

Imbribryum mildeanum (Juratzka) J.R. Spence (Bryaceae). Rare. On bare, wet soil of roadside ditch. Along Forest Rd M3 at Rd 18N51 jct, Snow Mtn. Wilderness, MNF, *9940* (ver. by J. Spence). This distinctive species grows in dense yellow-green tufts. Its shoots are imbricate wet or dry and the leaves have a shortly excurrent costa. Spence (2007) reported it new for North America from Colorado.

Imbribryum miniatum (Lesquereux) J.R. Spence (Bryaceae). Infrequent. On wet rocks in streams. North Cow Mtn. BLM Recreation Area, Eight Mile Valley, *7019* (ver. by J. Spence); drainage above Sky Rock below High Glade Lookout, MNF, *8741*; Big Rock N of Deer Valley and E of Elk Mtn., MNF, *8661*; Elk Mtn., along Forest Rd M1 below summit, *9476*.

Imbribryum muehlenbeckii (Bruch & Schimper) Pedersen (Bryaceae). Rare. On vertical chert wall with drainage in sun, headwaters of Rattlesnake Creek S of Hull Mtn. summit ridge, MNF, *10237* (coll. E. Dearing); same locality, *Shevock 45875 & 45879* (CAS) (ver. by J. Spence).

Imbribryum torenii J.R. Spence & Shevock (Bryaceae). Occasional. On soil or soil over rock, usually in open sites with runoff. High Valley N of Clear Lake, *8958*; Manning Creek, four mi W of Lakeport along Hwy 175, *9579*; Jerusalem Grade Rd, just W of Soda Creek, *9987*. This species, widespread in western North America, was described only recently (Spence and Shevock 2015).

Isopterygiopsis pulchella (Hedwig) Z. Iwatsuki (Hypnaceae). Rare. On shaded soil and exposed roots along stream. Headwaters of Bear Creek, Snow Mtn. Wilderness, MNF, *9447*.

Isothecium cristatum (Hampe) H. Robinson (Lembophyllaceae). Occasional. On shaded soil, rocks, and bases of conifers. Pogie Point Campground, Lake Pillsbury, MNF, *5047a*; Summit Lake, MNF, *7199*; E slope, Cobb Mtn., *7398*; summit of Mt. Konocti, *7859*.

Isothecium stoloniferum Bridel (Lembophyllaceae). Common. On shaded soil, boulders, and tree trunks. Summit Lake, MNF, *7216*; Clear Lake State Park, *7158*; N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7418*; Lower Nye Camp, Snow Mtn. Wilderness, MNF, *5333*.

Kindbergia oregana (Sullivant) Ochyra (Brachytheciaceae). Occasional. On shaded soil and over duff and rotten logs, usually in coniferous forest, rarely in mixed evergreen forest. Old county Rd, Blue Lakes, *5015*; Rd to Red Mtn. Camp, South Cow Mtn. BLM Recreation Area, *6918*; Summit Lake, MNF, *7206*; near summit Mt Konocti, *7882*.

Kindbergia praelonga (Hedwig) Ochyra (Brachytheciaceae). Common. Along shaded streams and springs, sometimes invading lawns. Schwartz Spring, Cobb Mtn., *5210*; Violet Spring, Log Ridge, MNF, *5286*; bottom of Streeter Ridge along Bucknell Creek, MNF, *7453*; Ericson Ridge, Mt. Sanhedrin, MNF, *5108*.

Leptobryum pyriforme (Hedwig) Wilson (Meesiaceae). Infrequent. On moist to wet soil. Jct of Hwy 20 and Main Street, Upper Lake, *7986*; Rd to Addington Springs W of Goat Mtn., MNF, *7551*; roadside along Corbin Creek, MNF, *5135b*; N cirque, Snow Mtn. Wilderness, MNF, *9162*. Tending to be a weedy moss, this is unmistakable in its filiform leaves and nodding, pyriform capsules. The stems at the base are nearly always blackish.

Leptodictyum humile (Palisot de Beauvois) Ochyra (Amblystegiaceae). Rare. On bark of willow in part shade. East shore of Clear Lake at Lucerne, *8878* (ver. J. Janssens). [=*Hygroamblystegium varium* var. *humile* (P. Beauv.) Vanderp. & Hedenäs]

Leptodictyum riparium (Hedwig) Warnstorf (Amblystegiaceae). Infrequent. In sluggish water in streams, also lakeshores, attached to wood or rock. Blue Lakes near the Narrows, *524* (SFSU); Goat Mtn. S of Addington Springs, MNF, *7555*; Hunting Creek, McLaughlin UC Reserve near Morgan Valley, *8621*; Robinson Creek crossing Bridge Arbor Rd, *8664*.

Leucolepis acanthoneura (Schwägrichen) Lindberg (Mniaceae). Infrequent. On moist to wet, shaded rocks, soil, and tree bases along streams. Alder Creek, Cobb Mtn., *7088*; N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7406*; Ericson Ridge, Mt Sanhedrin, MNF, *5100*; Grizzly Canyon N of Elk Mtn., MNF, *7961*. This is the only dendroid moss of wet habitats in the county and is far less common than along the coast.

Meiotrichum lyallii (Mitten) G.L. Merrill (Polytrichaceae). Rare. On damp soil of pond margin in Red Fir Forest. Snow Mtn. Wilderness at Cedar Camp, MNF, *1399* (SFSU); same locality, *7491*.

Metaneckera menziesii (Drummond) Steere (Neckeraceae). Occasional. On shaded boulders (especially beneath overhangs) and hardwood tree bases. Ericson Ridge, Mt. Sanhedrin, MNF, *5117*; Horse Creek E of Hull Mtn., MNF, *8105*; Crabtree Hot Springs, MNF, *5238*; Jones Creek, Boggs Mtn. State Forest, *7291*. This is a spectacular moss, which forms mats of complanate shoots with undulate leaves, sometimes becoming flagelliform. [=*Neckera menziesii* Drummond]

Microbryum starckeanum (Hedwig) R.H. Zander (Pottiaceae). Rare. On sunny, dry soil over rock in oak woodland. N end Bachelor Valley S of Hells Peak, *786* (SFSU, UC); Hwy 20, four mi N of Glenhaven, *8064*.

Mielichhoferia elongata (Hoppe & Hornschuch ex Hooker) Nees & Hornschuch (Mielichhoferiaceae). Rare. On shaded, moist bare soil around sulfur hot springs. Anderson Springs S of Cobb Mtn., *7256* (ver. by J. Shaw). The peculiar blue-green color of its tufts is distinctive. Other suitable habitats in the county for this rare moss do not seem to exist.

Mnium marginatum (Dickson ex Withering) Palisot de Beauvois (Mniaceae). Rare. In damp rock crevice in shade and in splash zone of falling water. N cirque between East Peak and Signal Peak, Snow Mtn. Wilderness, MNF, *9173*; Waterfall along Stony Creek NW of Milk Ranch, Snow Mtn. Wilderness, MNF, *9307* (coll. E. Dearing).

Mnium thomsonii Schimper (Mniaceae). Rare. On wet rotten wood along stream. Alder Creek, Cobb Mtn., *7089* (det. by R. Wyatt).

Neckera douglasii Hooker (Neckeraceae). Infrequent. On shaded hardwood bark, also on bark of Pacific yew, *Taxus brevifolia* Nuttall. North Cow Mtn. Recreation Area, *6941*; Summit Lake, MNF, *7215*; tributary to Bucknell Creek S of Little Round Mtn., MNF, *7453a*; Grizzly Canyon N of Elk Mtn., MNF, *7687*. Populations of this are very small in the county, mostly occurring at the more humid extreme bases of tree boles.

Niphotrichum elongatum (Ehrhart ex Frisvoll) Bednarek-Ochyra & Ochyra (Grimmiaceae). Rare. On sunny, disturbed soil in chaparral areas. South Cow Mtn. BLM Recreation Area near Fountain of Youth Camp, *6925*; same area as above, N end of Eight Mile Valley, *7009*; E of Lake Pillsbury S of Squaw Valley and N of Horsepasture Gulch, MNF, *9190*. This species forms short, hoary tufts and is more common toward the coast and northward. Its hairpoints are bent back when dry and are conspicuously decurrent.

Nogopterium gracile (Hedwig) Crosby & W.R. Buck (Leucodontaceae). Common. On boulders, cliffs, and tree bases in open shade. North Cow Mtn. BLM Recreation Area, *6983*; Clear Lake State Park, *6830*; Crabtree Hot Springs, MNF, *5244*; old toll road W of Highland Springs, *7900*. This moss was previously known as *Pterogonium gracile* (Hedwig) Smith and is easily recognized by branches that are curved downward in the same direction resembling a bird's foot.

Orthodicranum tauricum (Sapjegin) Smirnova (Dicranaceae). Occasional. On shaded rotten logs, bases of Douglas fir trees, rarely on shaded rock. Alder Creek, Cobb Mtn., *7093*; Pogie Point Campground, MNF, *5046*; Ericson Ridge, Mt. Sanhedrin, MNF, *5094*; Forest Rd 18N14 from M1, MNF, *7977*. The distinctive features of this moss include the dense, erect, dark green tufts with broken leaf tips

Orthotrichum affine Bridel (Orthotrichaceae). Rare. On hardwood or conifer bark, higher elevations. Mill

Creek, Mt. Sanhedrin, MNF, *7143*; beginning of Bear Wallow trail at Low Gap, MNF, *7727*.

Orthotrichum alpestre Hornschuch ex Bruch & Schimper (Orthotrichaceae). On shaded metavolcanic rock. Tributary to Bear Creek N of Cedar Camp, Snow Mtn. Wilderness, MNF, *9443*. This is one of the rarest *Orthotrichum* Hedwig species in the county. Vitt (1973) did not map any occurrences in the North Coast Ranges.

Orthotrichum bolanderi Sullivant (Orthotrichaceae). Occasional. On exposed rock, lower elevations. Carter Glade near Clover Creek, MNF, *7993*; Clear Lake State Park, *7037*; Hells Peak, *553* (SFSU); Knoxville BLM Recreation Area near Rieff Rd jct, *7060*. The distinctive plane leaf margins of this moss can be seen with a 20 × hand lens.

Orthotrichum columbicum Mitten (Orthotrichaceae). Rare. On shaded bark of maple. Ericson Ridge, Mt. Sanhedrin, MNF, *7147* (det. by R. Garilleti).

Orthotrichum consimile Mitten (Orthotrichaceae). Rare. On hardwood bark (alder and maple) in open shade. Summit Lake, MNF, *7212*; Grizzly Canyon N of Elk Mtn., MNF, *7697*.

Orthotrichum cupulatum Bridel (Orthotrichaceae). Infrequent. On exposed rock, upper elevations. Summit Springs Trail, Snow Mtn. Wilderness, MNF, *7460*; High Rock near Eel River, MNF, *8116*; Low Gap S of Sheetiron Mtn., MNF, *7728*.

Orthotrichum cylindrocarpum Lesquereux (Orthotrichaceae). Rare. On shaded bark of white alder and California bay. Swartz Spring, east base of Cobb Mtn. above town of Cobb, *9732*; Boggs Mtn. along Houghton Creek, *9733*.

Orthotrichum hallii Sullivant & Lesqereux (Orthotrichaceae). Rare. On sunny, calcareous rock. Knoxville BLM Recreation Area near Round Mtn., *7061*, (det. by J. Harpel).

Orthotrichum laevigatum J.E. Zetterstedt (Orthotrichaceae). Occasional. On exposed to shaded rock at higher elevations. Hull Mtn. summit, MNF, *460* (SFSU) (ver. by D. Vitt); Cobb Mtn. summit, *7397*; Sheetiron Mtn. summit, MNF, *5184*; Snow Mtn. Wilderness near summit, MNF, *7477*.

Orthotrichum lyellii Hooker & Taylor (Orthotricaceae). Common. On hardwood or conifer bark, up to 6000 ft. Cobb Mtn. summit, *7397*; near Hells Peak, *304* (SFSU); Hull Mtn., MNF, *463* (SFSU); Summit Lake, MNF, *7211*. Along with *Antitrichia californica*, this is the most common epiphytic moss in the county.

Orthotrichum obtusifolium Bridel (Orthotrichaceae). Infrequent. On hardwoods, oak, buckeye, maple, and poplar in open shade. Mill Creek, Mt. Sanhedrin, MNF, *7145*; Blue Slides Lake, MNF, *5263*; Summit Springs trailhead, Snow Mtn. Wilderness, MNF, *7522*; S of Hells Peak, *1039* (SFSU).

Orthotrichum norrisii F. Lara, R. Medina, & Gariletti (Orthotrichaceae). Common. On sunny bark of oaks, buckeye, and other hardwoods, low elevations. Hwy 153 one mi S of Hwy 20, *7366*; Anderson Marsh State Historic Park, *6810*; Clear Lake State Park, *6855*; N end of Bachelor Valley S of Hells Peak, *975* (SFSU) (dets. by F. Lara and R. Gariletti). Medina et al. (2008) determined that *O. norrisii* differs from *O. tenellum* Bruch ex Bridel mainly in having narrower exothecial bands.

Orthotrichum pellucidum Lindberg (Orthotrichaceae) Rare. On shaded, upper elevation calcareous rock. Goat Mtn., side of road just N of lookout, MNF, *9319* (det. by F. Lara).

Orthotrichum persimile F. Lara, R. Medina & Garilleti (Orthotrichaceae) Rare. On shaded bark of bigleaf maple, Mt. Sanhedrin, Ericson Ridge, along Forest Rd 20N04, MNF, *10232*.

Orthotrichum pylaisii Bridel (Orthotrichaceae). Rare. On exposed rock, higher elevations. Goat Mtn. summit, MNF, *5248* (det. by D. Norris, F. Lara); Snow Mtn. Wilderness S of Maloney Falls, MNF, *7604* (det. by F. Lara). This montane species was mapped for the Sierra Nevada (Vitt 1973) but not for the North Coast Ranges.

Orthotrichum rivulare Turner (Orthotrichaceae). Common. On rock, mostly in intermittent streams, up to 5000 ft. Big Canyon Creek Rd, *7283*; Eel River at High Rock, MNF, *5066*; Scott Dam, Lake Pillsbury, MNF, *7139*; W of Low Gap, S of Sheetiron Mtn., MNF, *7719*.

Orthotrichum rupestre Schleicher ex Schwägrichen (Orthotrichaceae). Common. On rock in open shade, rarely on bark. Dashiells, Mt. Sanhedrin, *A. Eastwood s.n.* (CAS); Bartlett Mtn. at Sawmill Flat, MNF, *5233*; North Cow Mtn. BLM Recreation Area, *6936*; Knoxville BLM Recreation Area, *7056*. This is a most variable species.

Orthotrichum schimperi Hammar (Orthotrichaceae). Infrequent. On sunny bark of oak, apple, and walnut. Indian Valley Reservoir, *7295*; S end of Middletown, *7250a*; Upper Lake Ranger Sta., *7473* (dets by F. Lara, R. Garilleti). This inconspicuous moss is the smallest corticolous species of the genus in the county.

Orthotrichum shawii Wilson (Orthotrichaceae). Rare. On exposed metavolcanic rock. Headwaters of Cold Creek two mi N of Crockett Peak, Snow Mtn. Wilderness, MNF, *9891* (ver. by R. Garilleti). This species was first collected in California by H.N. Bolander without a specific locality and the record was subsequently overlooked and forgotten (Garilleti et al. 2006). It resembles members of the *O. rupestre* complex but has slightly ribbed capsules. Mazimpaka et al. (2000) illustrated a distinctive sporophytic character in *O. shawii,* differential thickening of longitudinal walls of the exothecium, which resemble wavy bands.

Oxyrrhynchium hians (Hedwig) Loeske (Brachytheciaceae). Rare. On soil over rock in part shade. E slope of Cobb Mtn., along Hwy 175 at town of Cobb, *7097* (det. by M. Ignatov).

Phascum cuspidatum Hedwig (Pottiaceae). Occasional. On sunny, bare soil, usually in disturbed areas. Two mi N of Middletown, *Schofield 29002* (UBC); S of Hells Peak, *658* (SFSU); Hwy 53 one mi S of Hwy

20, *7322*; South Cow Mtn. BLM Recreation Area, *7034*. [=*Tortula acaulon*]

Philonotis americana Dismier (Bartramiaceae). Occasional. In wet meadowy areas at higher elevations. Cedar Camp, Snow Mtn. Wilderness, MNF, *7483*; Corbin Creek, MNF, *5058f*; Ericson Ridge, Mt. Sanhedrin, MNF *7151*; Kneecap Ridge, along M6 E of Forest Rd 20N09, *8845*.

Philonotis capillaris Lindberg (Bartramiaceae). Occasional. On shaded, seepy banks, often on roadcuts. Ericson Ridge, Mt. Sanhedrin, MNF, *5076*; Blue Lakes, old county road, *7430a*; Camel Back Ridge along Bottlerock Rd, *7007* (ver. by D. Griffin III); S of Hells Peaks, *1045* (SFSU).

Philonotis fontana (Hedwig) Bridel (Bartramiaceae). Common. In moist situations in sunny meadows, stream banks, and springs. South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *6892* (ver. by D. Griffin III); S of Hells Peak, *432* (SFSU); N of Lake Pillsbury on Hull Mtn. Rd, *462* (SFSU); Deer Valley Campground, MNF, *8011*.

Philonotis pumila Kindberg (Bartramiaceae). Rare. In wet meadows and springs above 5000 ft. N cirque of Hull Mtn., MNF, *7231*; S slopes of Sheetiron Mtn., Forest Rd M3, *Shevock 15870* (CAS); headwaters of Rattlesnake Creek S of Hull Mtn. summit, *Ma 14-5871* (CAS, KUN); Mt. Sanhedrin, headwaters of Mill Creek, *10213*.

Physcomitrella patens (Hedwig) Bruch & Schimper (Funariaceae). Rare. On wet soil in pastureland. Big Valley, Soda Bay Rd near Thompson Creek, *7857*.

Physcomitrium californicum E. Britton (Funariaceae). Infrequent. On sunny bare soil and margins of wet meadows. Upper Nye Camp, Snow Mtn. Wilderness, MNF, *Shevock 15843* (CAS); meadow E of Hells Peak, *431* (SFSU); Loch Lomond along Hwy 175, *7445*; above S shore of Lake Pillsbury near Lake Pillsbury Resort, MNF, *9358*.

Physcomitrium pyriforme (Hedwig) Hampe (Funariaceae). Rare. On saturated soil of meadow. E of Lake Pillbury, one mi SE of Big Squaw Valley, MNF, *9785*.

Plagiobryoides vinosula (Cardot) J.R. Spence (Bryaceae). Rare. On wet clay soil over rock in calcareous meadow. Walker Ridge at Cold Spring east and upslope from Indian Valley Reservoir, *9871* (ver. by J. Spence); Rodman Slough County Park, south of Nice cutoff road, *10307*. This is mainly a tropical species. Few North American records are known, with only a few other California localities documented.

Plagiomnium insigne (Mitten) T.J. Koponen (Mniaceae). Rare. On wet, shaded soil along streams. S of Summit Lake, MNF, *7210* (ver. by R. Wyatt); Grizzly Canyon N of Elk Mtn., MNF, *7679*.

Plagiomnium medium (Bruch & Schimper) T.J. Koponen (Mniaceae). Infrequent. In wet meadows and along streams. Boggy area beyond turnoff to Tule Lake, Mt. Sanhedrin, MNF, *7186* (det. by R. Wyatt); Upper Nye Camp, boundary of Snow Mtn. Wilderness, MNF, *5156*; Alder Creek, Cobb Mtn., *7080* (det. by R. Wyatt); Headwaters of Bear Creek, Snow Mtn. Wilderness, MNF, *7493*.

Plagiomnium venustum (Mitten) T.J. Koponen (Mniaceae). Occasional. On shaded banks, boulders, and tree bases. Grizzly Canyon N of Elk Mtn., MNF, *7693*; Ericson Ridge, Mt. Sanhedrin, MNF, *5113*; Spikenard Creek, Boggs Mtn. State Forest, *7105*; Clear Lake State Park, *6833*.

Plagiothecium laetum Schimper (Plagiotheciaceae). Rare. On shaded soil and over rotten wood. N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7414*; tributary of Dashiells Creek S of The Big Openings, *8161*; near Forest Rd 18N25 along Packsaddle Creek, MNF, *9311a*. This is another example of a moss that is more common in coastal California. The Lake County populations are very small.

Platydictya jungermannioides (Bridel) H.A. Crum (Hypnaceae). Rare. In shaded moist rock crevices and damp rotten wood along streams, Snow Mtn. Wilderness, MNF, Stony Creek NW of Milk Ranch, *9156*; N cirque, tributary to Stony Creek, *9172*. This is the smallest pleurocarpous moss in the county, which forms dull-green thin mats of threadlike shoots in calcareous areas.

Pleuridium acuminatum Lindberg (Ditrichaceae). Common. On sunny, bare, or disturbed soil, often in grassland areas. Hidden Valley N of Middletown, *7372* (det. by J. Yip); Manning Creek, four mi W of Lakeport, *7003*; South Cow Mtn. BLM Recreation Area, Eight Mile Valley, *7347a*; S of Hells Peak, *657* (SFSU).

Pleuridium subulatum (Hedwig) Rabenhorst (Ditrichaceae). Rare. On moist soil, edge of vernal marsh. Loch Lomond near Adams Springs, *7444* (det. by J. Yip).

Pohlia bolanderi (Lesquereux) Brotherus (Mniaceae). Rare. On shaded soil at base of red fir. Stony Creek NW of Milk Ranch, Snow Mtn. Wilderness, MNF, *9158*.

Pohlia camptotrachela (Renauld & Cardot) Brotherus (Mniaceae). Infrequent. On damp bare soil at higher elevations. Summit Lake, MNF, *7207*; Hull Mtn., N cirque, MNF, *7229* (det. by J. Shaw); Snow Mtn. Wilderness near Cedar Camp, MNF, *7482*; Tule Lake, Mt. Sanhedrin, MNF, *9111*. This plant has small axillary gemmae borne in clusters near the shoot tip, which can be seen with a 10 × hand lens.

Pohlia longibracteata Brotherus (Mniaceae). Rare. On shaded moist siltstone in seasonal drainage gully. Boggs Mtn. State Forest, tributary to Spikenard Creek, *9960*. According to Malcolm et al. (2009), This *Pohlia* becomes rare inland. All but one collection (*Shevock & Toren 20734*, Nevada County) cited in Norris and Shevock (2004) are from the coastal fog belt.

Pohlia nutans (Hedwig) Lindberg (Mniaceae). Rare. On bare, acidic soil and decayed logs. Clear Lake at Sulphur Bank Mine, *7278*; sulfur hot spring at

Anderson Springs, *7257* (ver. by J. Shaw); just S of Milk Ranch, Snow Mtn. Wilderness, MNF, *9147*.

Pohlia pacifica Shaw (Mniaceae). Rare. On damp, shaded, acidic soil of roadcut. Between Summit Lake and Smokehouse Creek, MNF, *7651* (ver. by J. Shaw). Shaw (1982) reported sites in California for this *Pohlia* only along the coast. The Lake County site is about forty mi inland.

Pohlia wahlenbergii (F. Weber & D. Mohr) A.L. Andrews (Mniaceae). Common. On wet soil in seeps, meadows, and along streams. Tributary to Corbin Creek, MNF, *5135h*; North Cow Mtn. Recreation Area, headwaters of Scotts Creek, *6972*; Forest Rd M10 near Blue Slides Lake, MNF, *5271*; county Rd 122 along Asbill Creek N of Middletown, *7732*.

Polytrichum juniperinum Hedwig (Polytrichaceae). Common. On sunny or shaded, usually bare soil. Alder Creek, Cobb Mtn., *7091*; N cirque, Hull Mtn., *7243*; Sulphur Bank Mine, Clear Lake, *7279*; one mi E of The Slides, W of Lake Pillsbury, *5093*.

Polytrichum piliferum Hedwig (Polytrichaceae). Common. On soil over rock in exposed places. Hells Peak, *6856*; North Cow Mtn. BLM Recreation Area, Mendo Rock, *6937*; Chalk Mtn. summit, north fork Cache Creek, *7318*; Pitney Ridge below McCabe Point, MNF, *8074*.

Porotrichum bigelovii (Sullivant) Kindberg (Neckeraceae). Infrequent. Along shaded streams in splash zones, on rock or on soil in crevices. Alder Creek, Cobb Mtn., *7087*; Jones Creek, Boggs Mtn. State Forest, *7290*; N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7421*; Grizzly Canyon N of Elk Mtn., MNF, *7965*. This moss with its complanate shoots and dentate leaf tips grows in constantly wet areas in the county. Along the coast it grows in more varied habitats.

Pseudobraunia californica (Lesquereux) Brotherus (Hedwigiaceae). Common. On exposed to shaded boulders and cliff faces, often with *Anacolia menziesii* and *Grimmia leibergii*. Mt. Sanhedrin, MNF; *A. Eastwood s.n.* (CAS); Clear Lake State Park, *7164*; Boggs Lake, *5213*; Mt. Konocti near summit, *7878*.

Pseudocrossidium hornschuchianum (Schultz) R.H. Zander (Pottiaceae). Rare. In sun on consolidated alluvium along seasonal stream. Tributary to North Fork of Cache Creek, 0.5 mi S of Redbud Trailhead, *9947*. This species has short-lanceolate leaves which contrast with the ovate to ovate-deltoid leaves of *P. obtusulum* (Lindberg) H.A. Crum & L.E. Anderson. This sole collection is without sporophytes and the plants appear to be exclusively female. The plants have strongly differentiated perichaetial leaves as described for the species (Zander 2007).

Pseudocrossidium obtusulum (Lindberg) H.A. Crum & L.E. Anderson (Pottiaceae). Infrequent. On sunny, bare soil in grassland areas. Along Manning Creek, Hwy 175, four mi W of Lakeport, *7002a*; Eight Mile Valley, South Cow Mtn. BLM Recreation Area, *7010*; Chalk Mtn., north fork of Cache Creek, *7312*; N end of Bachelor Valley S of Hells Peak, admixture in a collection of *Gemmabryum violaceum*, *843a*. The first report of this terricolous moss was from southern California just N of the Mexican border (Eckel et al. 1997), but it is actually widespread in the state at lower elevations.

Pseudoleskea incurvata var. **tenuiretis** (Culmann) Podpěra (Leskeaceae). Rare. On moist boulders along stream. Snow Mtn. Wilderness NW of Milk Ranch, MNF, *9157*; same locality, *9159* (ver. by J. Spence).

Pseudoleskea patens (Lindberg) Kindberg (Leskeaceae). Rare. On shaded boulders, higher elevations, above 5000 ft. Snow Mtn. Wilderness near Cedar Camp, MNF, *1397* (SFSU); headwaters of Bear Creek, Snow Mtn. Wilderness, MNF, *7841*; head of Mill Creek, Mt. Sanhedrin, MNF, *8077*; N slope of Kneecap Ridge, tributary to Sheep Creek, MNF, *8833*.

Pseudoleskea radicosa (Macoun) Kindberg (Leskeaceae). Rare. On shaded metavolcanic rock in Red Fir Forest. Slope above Stony Creek and Long Glade tributary confluence, Snow Mtn. Wilderness, MNF, *9456*.

Pterigynandrum filiforme Hedwig (Pterigynandraceae). Infrequent. On shaded boulders and trunks of bigleaf maple and white alder. Near Tule Lake, Mt. Sanhedrin, MNF, *1269* (SFSU); Mill Creek, Mt. Sanhedrin, *7142*; tributary to Stony Creek, Snow Mtn. Wilderness, MNF, *5351*. The delicate, pale green plants with blunt-tipped leaves distinguish this moss, which grows at higher elevations in the county.

Ptychomitrium gardneri Lesquereux (Ptychomitriaceae). Occasional. On exposed to shaded rocks, rarely on old wood. Dashiells, Mt. Sanhedrin, MNF, *A. Eastwood s. n.* (CAS); Cobb Mtn., E slope, *7124*; trail from Copper Butte to Eel River along Forest Rd M3, MNF, *5160*; N of confluence of St. Helena and Putah creeks, *7303*.

Ptychostomum bimum (Schreber) J.R. Spence (Bryaceae). Rare. On soil over rock in stream channel. E of Crockett Peak and SW of Waters Camp, Snow Mtn. Wilderness, MNF, *9927* (ver. by J. Spence). This differs from *Ptychostomum pseudotriquetrum* (Hedwig) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pederson in its synoicous inflorescences, non-decurrent leaf bases, and smaller leaf cells. It is probably more common in the county than this sole record indicates.

Ptychostomum creberrimum (Taylor) J.R. Spence & H.P. Ramsay (Bryaceae). Infrequent. On damp to dry, bare soil. Rd to Timber Lake, Snow Mtn. Wilderness, MNF, *8447*; Mt. Sanhedrin above Mill Creek Crossing, MNF, *8085*; McLaughlin Reserve near Morgan Valley, *8622*.

Ptychostomum cyclophyllum (Schwägrichen) J.R. Spence (Bryaceae). Infrequent. On wet, sandy soil along small streams. Copsey Creek E of Lower Lake, *7324*; along Morgan Valley Rd, *7052*; North Cow Mtn. BLM Recreation Area, Oakwood Springs, *6889* (ver. by J. Spence); Old Long Valley Rd, *7368*.

Ptychostomum pacificum J.R.Spence & Shevock. (Bryaceae). Infrequent. In wet montane meadows, often with corn lily (*Veratrum californicum* Durand). Mt.

Sanhedrin, headwaters of Mill Creek, MNF, *7633*; N slope of Hull Mtn., MNF, *7620*; Milk Ranch Meadow, Snow Mtn. Wilderness, MNF, *9151*; East Peak, Snow Mtn. Wilderness, MNF, *9167*.

Ptychostomum pallens (Swartz) J.R. Spence (Bryaceae). Rare. On wet soil on pond margins at moderate elevations. Tule Lake, Mt. Sanhedrin, MNF, *7217*; Summit Lake between Mt. Sanhedrin and Hull Mtn., MNF, *7193* (ver. by J. Spence).

Ptychostomum pallescens (Schleicher ex Schwägrichen) J.R. Spence (Bryaceae). Occasional. On wet soil in seepage areas. Roadside along Corbin Creek, MNF, *5058b*; Forest Rd M10 near Blue Slides Lake, MNF, *5265*; Goat Mtn. S of Addington Springs, MNF, *7561*; Ericson Ridge, Mt. Sanhedrin, MNF, *7137*.

Ptychostomum pseudotriquetrum (Hedwig) J.R. Spence & H.P. Ramsay ex Holyoak & N. Pederson (Bryaceae). Common. On moist soil or rock in sun or shade. Low Gap S of Sheetiron Mtn., *Shevock & Toren 18786*; North Cow Mtn. BLM Recreation Area, CDF water tank, *6951*; Alder Creek, Cobb Mtn., *7098*; East of Crockett Peak, SW of Waters Camp, MNF, *9923* (det. by J. Spence)

Ptychostomum turbinatum (Hedwig) J.R. Spence (Bryaceae). Rare. On soil over rock along stream, also along drainage of alkaline seep. Canyon below Hells Peak, *935* (SFSU) (det. by J. Spence); below Forest M1 W of Scott Dam, MNF, *9581a* (det. by J. Spence).

Ptychostomum weigelii (Sprengel) J.R. Spence (Bryaceae). Rare. In wet montane meadows. N cirque of Hull Mtn., MNF, *7234*; head of Mill Creek, Mt. Sanhedrin, MNF, *8075*; N cirque, Snow Mtn. Wilderness, MNF, *9175*. This is easily recognized by its pale tufts with distinctively shaped, widely spaced leaves with decurrent bases.

Rhizomnium glabrescens (Kindberg) T.J. Koponen (Mniaceae). Rare. On shaded, wet rotten wood or shaded mineral soil. Alder Creek, Cobb Mtn., *7084*; between Summit Lake and Smokehouse Creek, MNF, *7188*.

Rhynchostegium aquaticum A. Jaeger (Brachytheciaceae). Infrequent. Aquatic, in flowing water or in splash zones. Alder Creek, Cobb Mtn., *7096*; stream near Forest Lake, Hwy 175, *7264*; Snow Mtn. Wilderness, Copper Butte Creek, MNF, *8451*; Robert Lewis Stevenson State Park, Troutdale Creek, *8418*. Plants from California have long been known as *Platyhypnidium riparioides* (Hedwig) Dixon. See discussion regarding nomenclature of this taxon in Ignatov (2014).

Rhytidiadelphus triquetrus (Hedwig) Warnstorf (Hylocomiaceae). Rare. On litter of Douglas fir and Brewer oak. Near Low Gap and Round Mtn., just S of the Glenn County line, MNF, *8805, 8847*.

Rosulabryum bornholmense (Winkelmann & R. Ruthe) J. R. Spence (Bryaceae) Rare. On sunny volcanic soil. Boggs Mtn. State Forest, E of Calso Camp, *9846*. This has been confused with *R. rubens* (Mitten) J.R. Spence (Crundwell and Whitehouse 2001). The two are distinguished by size, color, and position of their rhizoidal tubers as well as the shape of the tuber cells. *Rosulabryum bornholmense* is thought to be a plant of acidic soils.

Rosulabryum canariense (Bridel) Ochyra (Bryaceae). Common. On soil, duff, or rock, often with other mosses. Blue Lakes, old county road, *5005*; Crockett Camp, Snow Mtn. Wilderness, MNF, *5140*; Clear Lake State Park, *7040*; Grizzly Canyon N of Elk Mtn., MNF, *7956*.

Rosulabryum capillare (Hedwig) J.R. Spence (Bryaceae). Common. On soil or rock, various exposures. Mt. Sanhedrin, Mill Creek, MNF, *7194* (ver. by J. Spence); Morgan Valley Rd E of Lower Lake, *7047*; Clear Lake State Park, *7159*; E slope Cobb Mtn., *7128*

Rosulabryum elegans (Nees) Ochyra (Bryaceae). Rare. In shaded, calcareous rock crevices. W of Low Gap and S of Sheetiron Mtn., MNF, *7724* (det. by J. Spence); rock outcrop, headwaters of Cold Creek, two mi N of Crockett Peak, *9888*.

Rosulabryum erythroloma (Kindberg) J.R. Spence (Bryaceae). Infrequent. On shaded soil, over duff or on shaded rock outcrops. Mt. Sanhedrin, Ericson Ridge MNF, *7269* (det. by J. Spence); Hull Mtn. above Timberline Camp, MNF, *7176*; E slope Cobb Mtn., *7123*; Mt. Konocti at Buckingham Bluffs, *Shevock 20605* (CAS, UC).

Rosulabryum flaccidum (Bridel) J.R. Spence (Bryaceae). Rare. On exposed soil over rock. Hidden Valley N of Middletown, *7577* (ver. by J. Spence); Goat Rock NW of Middletown and SW of Harbin Springs, *10129*. This small *Rosulabryum* J.R. Spence resembles *R. capillare* but has filamentous axillary gemmae.

Rosulabryum gemmascens (Kindberg) J.R. Spence (Bryaceae). Infrequent. On sunny bare soil and old masonry walls. S shore of Clear Lake at Konocti Harbor Inn, *8972*; Manning Creek, four mi W of Lakeport on Hwy 175, *9601c*; meadow at end of Conestoga Rd, Hidden Valley, *9781*; Mariah Meadows resort S of Mt Hannah, *9841* (ver. by J. Spence).

Rosulabryum rubens (Mitten) J.R. Spence (Bryaceae). Infrequent. On soil or rock in disturbed areas. South Cow Mtn. BLM Recreation Area, staging area, *6924*; Knoxville BLM Recreation Area, Round Mtn., *7066* (det. by J. Spence); Library Park, Lakeport, *7667*; base of Mt. Konocti at Little Borax Lake, *7851*.

Rosulabryum torquescens (Bruch & Schimper) J.R. Spence (Bryaceae). Rare. On dry soil. E of Hwy 29 at Robinson Creek and Bridge Arbor Rd, *8667* (ver. by J. Spence); Scotts Valley Rd W of Lakeport, *8723*; Forest Rd M1 two mi N of Upper Lake Ranger Sta., *9613a*.

Schistidium cinclidodonteum (Müller Hal.) B. Bremer (Grimmiaceae). Occasional. On rocks in intermittent streams. Horse Glade Camp, Goat Mtn., MNF, *5260* (det. by H. Blom); Sweetwater Creek, Hidden Valley, *5196a*; Snow Mtn. Wilderness, Milk Ranch Trail, MNF, *7470*; W of Low Gap and S of Sheetiron Mtn., MNF, *Shevock 18787* (CAS, UC) (det. by H. Blom).

Schistidium confertum (Funck) Bruch & Schimper (Grimmiaceae). Rare. On shaded boulders, Snow Mtn. Wilderness, MNF, West Crockett Campground, *5140a*; below West Peak, *7469* (det. by H. Blom); near Milk Ranch, *1970* (SFSU); Rattlesnake Creek below Hull Mtn. summit, *Ma 14-5866* (CAS, KUN).

Schistidium dupretii (Thériot) W.A.Weber (Grimmiaceae). Rare. On soil over rock in crevices. Near Milk Ranch, Snow Mtn. Wilderness, MNF, *1970*. (SFSU) (ver. by T. McIntosh). *Schistidium dupretii*, similar in size to *S. confertum*, differs from the latter in having muticous leaves with oblate basal marginal cells, and perichaetial leaves not concealing the capsules, which are often striolate when dry.

****Schistidium echinatum** Ignatova & H.H. Blom (Grimmiaceae). Rare. On exposed metavolcanic rock. Ridgetop E of Crockett Peak just N of Snow Mtn. Wilderness, MNF, *9500b* (MW) (det. by E. Ignatova). The Lake County collection represents the only known North American site for this recently described species, otherwise known from across Eurasia (Ignatova et al. 2011).

***Schistidium flaccidum** (De Notaris) Ochyra (Grimmiaceae). Rare. On exposed rock at the highest elevations. Above Timberline Camp, Hull Mtn., MNF, *779* (SFSU), *7176b*; West Peak, Snow Mtn. Wilderness, MNF, *7505* (det. by H. Blom); N of East Peak, Snow Mtn. Wilderness, MNF, *7503*. This rare *Schistidium* can easily be confused with *Grimmia anodon* and the two can grow sympatrically.

Schistidium rivulare (Bridel) Podpěra (Grimmiaceae). Infrequent. On rocks in streams and snowmelt drainages. Snow Mtn. Wilderness below West Peak, MNF, *7467*; Hull Mtn., N cirque, MNF, *7242*; Eel River at Copper Butte Creek confluence, MNF, *5164a*; Grizzly Canyon N of Elk Mtn., MNF, *7971* (ver. by H. Blom).

Schistidium splendens T.T. McIntosh, H.H. Blom, D.R. Toren & Shevock (Grimmiaceae). Occasional. This is a recently described species in the *S. apocarpum* complex, related to the boreal/alpine *S. pulchrum* (McIntosh et al. 2015). It is known from the coastal ranges from British Columbia to California. This moss forms relatively delicate, loose glossy tufts on boulders along streams and rock outcrops with runoff. It occurs mostly in the northern part of the county. The Big Openings above Cedar Creek, MNF, *8098*; Ericson Ridge, Mt. Sanhedrin, MNF, *5078*; Rattlesnake Creek along Forest Rd M-6, MNF, *8103*; Pine Mtn., headwaters of Benmore Creek, MNF, *7981*. The type locality is Boggs Mtn. State Forest.

Schistidium squarrosum T.T. McIntosh, H.H. Blom, D. R. Toren & Shevock (Grimmiaceae). Occasional. This is another recently described species related to *S. cinclidodonteum* (McIntosh et al. 2015). It differs from the latter in having ovate-lanceolate rather than linear-lanceolate leaves, which are squarrose when wet whereas the leaves of *S. cinclidodonteum* when wet tend to be falcate-secund. Its habitat is rock outcrops with minimal runoff whereas *S. cinclidodonteum* occurs in stream channels with running water at least part of the year. This moss is widespread in Lake County: Forest Rd M12 from Nice to Bartlett Mtn., MNF, *8127*; the Slides W of Lake Pillsbury, MNF, *7535*; North Cow Mtn. BLM Recreation Area at CDF water tank, *Shevock 16894* (CAS); Manning Creek, four mi W of Lakeport on Hwy 175, *7405*.

Sciuro-hypnum oedipodium (Mitten) Ignatov & Huttunen (Brachytheciaceae). Rare. On damp soil over duff. Mt. Sanhedrin above Mill Creek Crossing of Forest Rd 20N04, MNF, *7140* (ver. by M. Ignatov).

Scleropodium californicum (Lesquereux) Kindberg (Brachytheciaceae). Rare. On soil of steep road bank in diffuse light. N base of Mt. Konocti at Soda Bay, *8536* (ver. by B. Carter); Clear Lake State Park near Kelsey Creek Slough, *6850*. Carter (2012) mapped the distribution of this moss with most localities being coastal and with concentrations around San Francisco Bay. Inland sites are apparently rare.

Scleropodium cespitans (Müller Hal.) L.F. Koch (Brachytheciaceae). Common. On shaded rock, soil, and tree bases. Western Mine Rd N of Mt. St. Helena, *5222* (det. by Norris); Clear Lake State Park, *6837*; Old County Rd, Blue Lakes, *5008*; N end of Bachelor Valley S of Hells Peak, *337* (SFSU).

Scleropodium julaceum E. Lawton (Brachytheciaceae). Occasional. On soil and tree bases. Pogie Point Campground, Lake Pillsbury, MNF, *5045*; vernal pool E of Tule Lake, Mt. Sanhedrin, MNF, *7204*; Bucknell Creek, N of Garrett Mtn., MNF, *7420*; Little Borax Lake, base of Mt. Konocti, *7855*. This species is rather small, usually growing in compact mats, and the branches are strongly julaceous due to the appressed and imbricate leaves (Lawton 1967). However, it can grow in vernal pools where its growth habit is much altered.

Scleropodium occidentale B.E. Carter (Brachytheciaceae). Infrequent. Growing in splash zone of small streams. Boggs Mtn. State Forest, *B.E. Carter 6792*; Steep canyon of Knibb Ranch S of Kelseyville, 29 Mar 2012, *B.E. Carter 6847* (UC). Carter (2012) recently described this species that is close to *S. obtusifolium* (Mitten) Kindberg using molecular tools as well as pointing out morphological and ecological differences.

Scleropodium obtusifolium (Mitten) Kindberg (Brachytheciaceae). Common. Semiaquatic on rock or exposed roots. Schwartz Spring, Cobb Mtn., *5207*; Crabtree Hot Springs, MNF, *5242*; Hells Peak, *305* (SFSU); W of Low Gap S of Sheetiron Mtn., MNF, *7725*.

Scleropodium touretii (Bridel) L.F. Koch (Brachytheciaceae). Common. On shaded soil, often on roadbanks. Deer Valley Campground, MNF, *8007*; Clear Lake State Park, *6823*; Complexion Springs N of Indian Valley Lake, *931* (SFSU); two mi W of Big Rock N of Deer Valley, MNF, *8004*.

Scouleria aquatica Hooker (Scouleriaceae). Rare. On rock in intermittent waterfall. W slope of Crockett Peak, tributary to Stony Creek, Snow Mtn. Wilderness, MNF, *7591*; Mill Creek below Tule lake near crossing of Forest Rd 19N17, Mt. Sanhedrin, MNF, *9105*.

Syntrichia caninervis Mitten (Pottiaceae). Rare. On dry calcareous soil and travertine. Grizzly Springs along

Hwy 20, *2849* (SFSU); same locality, *6821*; base of Chalk Mtn., north fork of Cache Creek, *7329* (ver. by B. Mishler). These populations are a western outlier of a broader distribution in the eastern Sierra Nevada and Great Basin.

Syntrichia laevipila Bridel (Pottiaceae). Common. On bark of hardwoods, not present at the highest elevations. Clear Lake State Park, *7038*; Buckingham Bluffs, Mt Konocti *8646*; Lakeport, Lake County Museum grounds, *9457*; Big Canyon Rd along Putah Creek, *7292*.

***Syntrichia laevipila** Bridel var. **meridionalis** (Schimper) Juratzka (Pottiaceae). Rare. On bark of valley oak (*Quercus lobata*) and California bay (*Umbellularia californica*). Middletown, Central Park, *7349*; Hwy 20 at Nice, *7708* (ver. by B. Mishler); Middletown County Park W of Middletown, *9406*, *9851*.

Syntrichia latifolia (Bruch ex Hartman) Huebener (Pottiaceae). Common. On shaded hardwood bark, rarely on rock. S of Hells Peak, *650* (SFSU); Hells Half Acre along Putah Creek, *8494*; Rodman Slough, N shore of Clear Lake, *8528*; Big Canyon Rd along Putah Creek, *7251*. This species, with its muticous and gemmae bearing leaves, is often found in or near inundation zones of streams and lakes.

Syntrichia montana Nees (Pottiaceae). Occasional. On sunny rock or thin soil over rock. Forest Rd M1 one mi N of Middle Creek Campground, MNF, *9613b*; Forest Rd M10, Bartlett Mtn. near Ruppert Ridge, MNF, *9622*; Snow Mtn. Wilderness near Cedar Camp, MNF, *9442*; Hells Peak, *6863*.

Syntrichia norvegica F.Weber (Pottiaceae). Rare. On soil or rock. Snow Mtn. Wilderness, N of east peak, MNF, *7504*; Ridge E of Crockett Peak just N of Snow Mtn. Wilderness, MNF, *9405*; 0.5 mi N of Cedar Camp along Milk Ranch trail. MNF, *9440* (ver. by K. Kellman).

Syntrichia papillosa (Wilson) Juratzka (Pottiaceae). Rare. On bark of cultivated trees, probably introduced. Middletown, on walnut, *7250*; Upper Lake Ranger Sta., on apple, *7436*; Lakeport, Library Park, on coast redwood, *7897* (ver. by B. Mishler); Lake County Museum grounds, Lakeport, *8144*. The gemmae borne on the leaves and simple leaf papillae distinguish this species.

Syntrichia papillosissima (Coppey) Loeske (Pottiaceae). Rare. On soil at edge of alkaline seep. Below Forest Rd M1 W of Scott Dam, Lake Pillsbury area, MNF, *9007* (ver. by K. Kellman); same locality, *9581b*; Grizzly Springs along Hwy 20, *B Mishler & E. Dearing 3-30-12-C* (UC).

Syntrichia princeps (De Notaris) Mitten (Pottiaceae). Common. On soil and tree trunks in sun or shade. Clear Lake State Park, *6854*; Lower Nye Camp, Skeleton Creek, MNF, *5343*; Anderson Marsh State Historic Park, *6813*; Hunter Point, Middle Mtn., MNF, *7705* (det. by B. Mishler).

Syntrichia ruralis (Hedwig) F. Weber & D. Mohr (Pottiaceae). Common. On sunny or shaded rock, all elevations. Snow Mtn. Wilderness, west peak, MNF, *7517*; Hells Peak, *6861*; North Cow Mtn. BLM Recreation Area, head of Scotts Creek, *6969*; Knoxville BLM Recreation Area, Round Mtn., *7067* (det. by B. Mishler).

Syntrichia virescens (De Notaris) Ochyra (Pottiaceae). Rare. On shaded rock, high elevations. Snow Mtn. Wilderness, N of East Peak, MNF, *7513* (det. by K. Kellman); tributary to Bear Creek N of Cedar Camp, *9442*.

Timmiella anomala (Bruch & Schimper) Limpricht (Pottiaceae). Rare. On sunny or shaded soil. Hwy 175 E of Lakeport near South Fork of Scotts Creek, *9647* (det. by R. Zander). BLM Cache Creek Management Area, Redbud Trail, *9865*.

Timmiella crassinervis (Hampe) L.F. Koch (Pottiaceae). Common. On sunny or shaded soil, or soil over rock, not at the highest elevations. Boggs Mtn. State Forest, Spikenard Creek, *7111*; Mt Konocti below Buckingham Bluffs, Shevock *20607* (ver. by R. Zander); Middletown County Park, *9407* (ver. by R. Zander); Middle Mtn. near Hunter Point, MNF, *7707a*. This plant has glistening, yellow-green and spreading leaves when wet, but when dry the strongly incurved leaves display a shiny yellow costa.

***Tortella alpicola** Dixon (Pottiaceae). Rare. In shaded limy crevices of metavolcanic rock. W of Low Gap and S of Sheetiron Mtn., MNF, *Shevock 15866* (BUF, CAS) (det. by P. Eckel) and same locality, *7714*. This species was first reported from North America as *T. tortelloides* (Greene) Robins. (Eckel 1991). Zander (1993) found that *T. alpicola* is an older name for *T. tortelloides*. This is the sole California locality for this moss.

Tortula amplexa (Lesquereux) Steere (Pottiaceae). Rare. On moist soil banks near streams. Meadow E of Hells Peak, *1049* (SFSU); Hwy 20, 10.3 mi E of Hwy 53 jct, *7332*, BLM Cache Creek Management Area, *K. Kellman 6837*. The perichaetial leaves, which sheath the base of the seta, can be seen with a 10 × hand lens.

Tortula bolanderi (Lesquereux) M. Howe (Pottiaceae). Common. On sunny or shaded bare soil, sometimes in moist crevices. Below Hells Peak, *654* (SFSU); Bottlerock Rd near Boggs Lake, *838* (SFSU); Lower Nye Camp, MNF, *5332*; near Harbin Springs, *7282*. This species is slightly larger than *T. amplexa,* has stouter capsules and lacks the sheathing perichaetial leaves of the latter.

Tortula brevipes (Lesquereux) Brotherus (Pottiaceae). Infrequent. On sunny, dry soil. Chalk Mtn., north fork of Cache Creek, *7298*; Hwy 20 and new Long Valley Rd, *7301*; N end of Bachelor Valley, *1037* (SFSU); Clear Lake State Park, *7046*.

Tortula brevissima Schiffner (Pottiaceae). Rare. On old cement bridge abutment in sun. St Helena Creek bridge, eastern part of Middletown, *9956* (ver. by K. Kellman). Kellman (2012) reported this species as new to North America from the coastal counties of Monterey, Santa Cruz and San Mateo. It resembles *T. atrovirens* but has a hair point. It can also be confused with *T. muralis*, but that species lacks the adaxial pad of radially elongate cells present in *T. brevissima.*

Tortula guepinii (Bruch & Schimper) Brotherus (Pottiaceae). Rare. On sunny soil over rock. S of Hells

Peak, *1076* (SFSU); Manning Creek, four mi W of Lakeport on Hwy 175, *6997*; Hells Half Acre along Putah Creek, *8492*; Forest Rd M1, one mi N of Middle Creek Campground, MNF, *9020*. Microscopically, this species has cells of the upper leaf margins distinctly less papillose than those toward the costa.

Tortula muralis Hedwig (Pottiaceae). Occasional. On sunny rock, often on concrete and brickwork. Main Street and Konocti Rd, *7658a*; Hwy 20 and Main Street, Upper Lake, *7432*; Middletown at Old St. Helena Creek bridge, *8935*. This is a cosmopolitan plant, widely known as an urban moss.

Tortula plinthobia (Sullivant & Lesquereux) Brotherus (Pottiaceae). Rare. On sunny volcanic soil over rock. Coyote Creek inlet to Hidden Valley Lake, *9468* (ver. by R. Zander). This species can be separated from *Tortula muralis* by its shorter peristome.

Tortula protobryoides R.H. Zander (Pottiaceae). Rare. On sunny, dry soil. Hwy 53, one mi S of Hwy 20 jct, *Norris 47705* (UC).

Tortula subulata Hedwig (Pottiaceae). Occasional. On sunny to shaded soil, more common at higher elevations. Bottlerock Rd S of Kelseyville, *659* (SFSU); Cobb Mtn. near Alder Creek, *7085*; Ericson Ridge, Mt. Sanhedrin, MNF, *5079*; off Socrates Mine Rd W of Castle Rock Springs, *7400*.

Trachybryum megaptilum (Sullivant) W.B. Schofield (Brachytheciaceae). Rare. On shaded conifer or hardwood litter. Forest Rd M1 between Pine Mtn. Rd and Violet Spring, MNF, *7435*; tributary to Willow Creek E of Forest Rd M1, MNF, *7455*; Grizzly Canyon N of Elk Mtn., MNF, *7970*; Mill Creek below Tule Lake near crossing of Forest Rd 19N17, MNF, *9106*. The genus *Trachybryum* (Brotherus) W.B. Schofield has been retained by this author. However, Ignatov and Huttunen (2002) opined *Trachybryum* is well nested within *Homalothecium* Schimper. [=*Homalothecium megaptilum* (Sullivant) H. Robinson].

***Trichodon cylindricus** (Hedwig) Schimper (Ditrichaceae). Rare. On silty bank of rivulet in shade, at 6300 ft. N cirque of Hull Mtn., MNF, *7622* (coll. E. Dearing, ver. by R. Ireland). Ireland (1978) mapped the distribution of this species in western North America from northern Oregon, Idaho, and Montana northward to Alaska. Its small size may be the reason it is overlooked.

***Trichostomum brachydontium** Bruch (Pottiaceae). Rare. On soil in rock crevices. Forest Rd M12 to Bartlett Mtn., 1.2 mi from Hwy 20, *9377* (ver. by R. Zander).

Weissia controversa Hedwig (Pottiaceae). Common. On bare soil in sun or open shade, usually on banks, lower elevations. Cobb Mtn., E slope, *7129*; Morgan Valley, *7049*; Hells Peak, *6859*; Spruce Grove Rd S of Lower Lake, *7074*. When moist the leaves of this moss show incurved leaf margins and when dry they are strongly crisped.

Weissia inoperculata (H.A. Crum) H.A. Crum, Steere, and L.E. Anderson (Pottiaceae) Rare. On seasonally moist soil in sunny meadow. Hidden Valley at end of Conestoga Rd, *9780* (ver. by R. Zander). Based on the specimen cited here, Toren and Dearing (2011) gave an accounting of the first authentic material collected since its discovery on the campus of Stanford University, Santa Clara County (Crum 1957).

Weissia ligulifolia (E.B. Bartram) Grout (Pottiaceae). Rare. On exposed serpentine soil over rock. N of Middletown along St. Helena Creek, *7305*; three mi N of Middletown along Hwy 29, *9734* (ver. by R. Zander); Grizzly Springs along Hwy 20, *9952*.

Zygodon rupestris Schimper ex Lorentz (Orthotrichaceae). Infrequent. On shaded hardwood tree bases, rarely on shaded boulders. S of Hells Peak, *976* (SFSU); Alder Creek, Cobb Mtn., *7344* (ver. by D. Vitt); N slopes of Garrett Mtn. above Bucknell Creek, MNF, *7407*; one mi W of Soda Creek W of Lake Pillsbury, MNF, *7360* (ver. by D. Vitt). This species forms small, light green tufts and its leaves have a terminal smooth, elongate cell that is visible with a 20 × hand lens. The septate, torpedo-shaped gemmae are highly diagnostic.

APPENDIX 2

Lake county mosses occurring only on Snow Mountain and immediate vicinity.

Brachytheciastrum collinum
Coscinodon calyptratus
Cratoneuron filicinum
Didymodon californius
Eurhynchiastrum pulchellum
Fontinalis chrysophylla
Gymnostomum aeruginosum
Gemmabryum kunzei
Imbribryum mildeanum
Isopterygiopsis pulchella
Meiotrichum lyallii
Mnium marginatum
Orthotrichum alpestre
Platydictya jungermannioides
Pohlia bolanderi
Pseudoleskea incurvata var. tenuiretis
Pseudoleskea radicosa
Schistidium confertum
Schistidium echinatum
Syntrichia virescens

APPENDIX 3

Taxa occurring in Lake County for which statewide conservation efforts have been applied. Listings and ratings are subject to change and are not included here. An asterisk (*) preceding the scientific name indicates that species is known from Lake County from only one occurrence.

Didymodon norrisii. This highly distinctive moss has been more widely collected in recent years and is now considered much more common than originally thought. Therefore, it has been given a lower ranking in the CNPS inventory. It is widespread in Lake County.

Grimmia torenii. Apparently this *Grimmia* is endemic to the coastal mountains of central California. It should be sought in the counties of Marin, Napa, Solano, Sonoma, and Yolo. For a more detailed account of this species, see Hastings (2008).

****Mielichhoferia elongata***. Although known from several counties in California, populations are small and highly localized. Search efforts for this moss should be concentrated on damp to moist, highly acidic rock and soils with elevated levels of heavy metals or sulfur. For more details and illustrations of this unique plant, see Malcolm et al. (2009).

****Plagiobryoides vinosula.*** Known from California for less than 10 years, this moss is somewhat nondescript. Search efforts should be focused on calcareous springs, including hot springs. It is more common in the desert areas of southern California and southward into México.

****Schistidium echinatum***. The only known site in North America for this otherwise Eurasian species is Lake County, California. Its occurrence on U.S. Forest Service lands should ensure its protection.

****Tortella alpicola***. Currently the Lake County collections are the only California records for this taxon. It is afforded some protection by its occurrence on U.S. Forest Service lands. Surveys in montane areas with calcareous rock are likely to reveal more localities in California.

****Trichodon cylindricus***. The population from the north slope of Hull Mountain is on U. S. Forest Service lands, giving it protection. Though it is more common north of California, only a few small populations have been found elsewhere in the state, specifically the Klamath Region and the northern Sierra Nevada.

****Weissia inoperculata***. Only two recent records are known for this California endemic moss. For an historical account, see Toren and Dearing (2011). The Lake County occurrence is on private land.